

G. Landsberg • W. Hunthausen • L. Ackerman

Third
Edition

Behavior Problems of the Dog & Cat



Includes access to www.petbehaviorbook.com
Features forms and handouts



SAUNDERS
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Formerly the
Handbook of Behavior Problems
of the Dog and Cat

Behavior Problems of the Dog and Cat

To my loving wife Susan, our amazing children Joanna, Mitchell, and Jordan, our special little girl Buffy (the Bichon)
Gary Landsberg

To my beautiful wife Jan Kyle and our beloved pets; to committed, compassionate behavior consultants and trainers working to preserve the bond between families and their pets; and to families with the courage and dedication

to work with a problem pet instead of taking an easy way out
Wayne Hunthausen

To my much-loved wife Susan, our incredible children Nadia, Rebecca, and David, and our much-loved Golden Retriever Marilyn
Lowell Ackerman

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Behavior Problems of the Dog and Cat

THIRD EDITION

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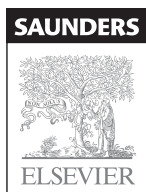
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Preface

Not that long ago, animal behavior was considered an interesting diversion for veterinarians, but little emphasis was placed on this discipline in veterinary school curricula or continuing education for practitioners. Now, there is a general awakening in the veterinary profession as practitioners realize the importance of this subject to their clients, the well-being of their patients, and the success of their practices. Attention to behavioral signs and problems is an essential part of veterinary medicine since behavioral signs and changes are often the first or only signs of underlying health problems. But behavior also plays a critical role in the relationship between the pet and its owners. The behavior, or anticipated behavior, of the pet is often the most important consideration influencing its adoption, while the pet's behavior can also lead to the dissolution of the bond between it and the family. Unacceptable behavior is one of the more common reasons for abandonment and euthanasia of dogs and cats. North American statistics suggest that more pets are euthanized for behavioral reasons than for all medical reasons combined. This should be enough of an incentive for veterinarians to incorporate behavioral evaluations and counseling into everyday practice.

This book is designed to provide the veterinarian in general practice with the tools to help owners with concerns they might have about their pets' behavior. Most importantly, it helps veterinarians incorporate behavior consultations into their practices in a meaningful way, and utilizes hospital paraprofessional staff to their optimum. Not only does the book introduce topics such as learning theory and behavior modification techniques, but it also covers the diagnostic and therapeutic options for the successful management of behavior problems. In this edition, we not only address neuropharmacology and psychoactive drug activity, but also examine important training techniques and nutritional intervention, and explore alternative forms of therapy. Another important focus of this edition is the importance that regular veterinary care plays in maintaining not only the health but also the behavior and welfare of the pet. To this end a new chapter is devoted to making veterinary visits a positive experience and how best to manage pets that are fearful. In addition, we have expanded our focus on the role that behavior plays in the health of pets and the importance of behavioral monitoring. Throughout the text we have included cases to illustrate real-life clinical situations. To illustrate the principles best and because of veterinary-client

confidentiality, our case examples are composite representatives of our caseload rather than actual clinical cases.

To be successful in managing behavior problems, veterinarians must offer more help than just training the pet. The proper approach to behavioral problems does not differ significantly from any other medical discipline. One needs to evaluate patient history carefully, perform a thorough physical examination, formulate differential diagnoses, conduct diagnostic testing, initiate treatment options, and monitor the patient's responses. Let this book serve as your guide.

We have also included in this book a number of the forms and handouts that we utilize in our consultations with clients. These forms and handouts, as well as our resource list and drug dosing table, have been reproduced online so that they can be printed for use in your practice. We hope that you find them valuable support aids for offering behavioral services.

To all of those who took the time to share with us their thoughts, ideas, and observations on behavior, we wholeheartedly thank you.

In this edition we have incorporated the work of additional veterinary contributors from around the world to bring new content and new insight to our behavioral text. We are pleased to welcome the involvement of Jaume Fatjó (Spain), Kersti Seksel (Australia), Moisés Heiblum (Mexico), Sophia Yin, Lisa Radosta, and Theresa DePorter (USA). We would also like to thank our Australian veterinary behavior colleagues Dr. Jacqui Ley and Dr. Gaille Perry for their input, Donna Dyer for her editorial support, Dr. R.K. Anderson, both as mentor and friend, whose gentle, calm, and positive approach has helped to shape the way we practice, and Dr. Patrick Pageat, who has provided us with an overview and translation of his diagnostic terminology, first introduced into the French veterinary behavior literature in his text *Pathologie du comportement du chien*.

And a very special thank you to our families who saw less of us, to our pets who received less attention and fewer walks, and to our partners and associates in practice who covered for us. You have no idea how much we appreciate your patience and value the support that you gave us while we worked on this project.

Lowell Ackerman
Wayne Hunthausen
Gary Landsberg
2012

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Wayne Hunthausen

Dr. Wayne Hunthausen is the director of Animal Behavior Consultations in the Kansas City metropolitan area, which provides behavior consultations and training services for pet owners, and behavioral support for veterinarians. He received his BA and DVM degrees from the University of Missouri where he was a member of Phi Zeta, Veterinary Honor Society. He has been working in the area of applied animal behavior since 1982. Dr. Hunthausen is an internationally renowned lecturer and author on the topic of pet behavior. He writes for a variety of veterinary and pet publications, is

the co-author and coeditor of a number of books on companion animal behavior, and is the veterinary editor for over 40 dog breed books. He helped to develop and appeared in the award-winning child safety video *Dogs, Cats and Kids: Learning to be Safe with Animals*. Dr. Hunthausen currently serves on the advisory board for the Society of Veterinary Behavior Technicians, and the boards of a number of veterinary journals. He has served as the president and executive board member of the American Veterinary Society of Animal Behavior. In 1996, he helped cofound the Interdisciplinary Forum for Applied Animal Behavior. Dr. Hunthausen received the American Animal Hospital Association's PetCare Award for outstanding contributions to small animal behavior medicine in 2002. In his spare time, he is an avid photographer and hiker, and enjoys cycling, movies, and traveling with his wife, Jan.

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Dr. Lowell Ackerman is a board-certified veterinary specialist, an award-winning author, an international lecturer, and a renowned expert in veterinary practice management. He is a graduate of the Ontario Veterinary College and a Diplomate of the American College of Veterinary Dermatology. In addition to his veterinary credentials, he also has an MBA from the University of Phoenix, an MPA from Harvard University, and a Certificate in Veterinary Practice Administration from Purdue University/American Animal Hospital Association. Over his career, Dr. Ackerman has been engaged in specialty practice, primary care practice, academia, consulting, industry, and teaching. He is the author or co-author of several books, including *Five-Minute Veterinary Practice Management Consult*, *The Genetic Connection*, *Effective Veterinary Practice*, *Owner's Guide to Dog Health*, and *Cat Health Encyclopedia*.

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Behavior counseling and the veterinary practitioner

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It is clear that efforts are needed to involve veterinarians more actively in providing behavioral services. Veterinarians are in the unique position of having repeated contact with most owners during the early, formative months of the pet's life, when important information about preventive health and behavioral management must be disseminated. Veterinarians also play an essential role in determining if there are medical factors contributing to any change in behavior, as well as determining whether the pet's behavior is typical, atypical, or pathological. Providing behavioral care requires education of each member of the "behavioral team" in typical species behavior, learning principles, behavioral diagnostics, and behavior case management.

Behavioral training for the hospital team

Veterinary Behavior is a recognized veterinary medical specialty in North America (American College of Veterinary Behaviorists or ACVB) and in Europe (European College of Veterinary Behavioral Medicine – Companion Animals or ECVBM-CA). In Australia, one can become a Fellow of the Australian College of Veterinary Scientists in Animal Behaviour. Veterinary technicians in North America can now

achieve certification from the Academy of Veterinary Behavioral Technicians. Ensuring behavioral health is also an important welfare issue. To this end behavior is now a subspecialty of the European College of Animal Welfare and Behavioural Medicine. In addition to providing behavior counseling services, veterinarians play a key role in ensuring that the welfare and needs of the pet are addressed. Yet the minimum behavioral welfare requirements for the housing and enrichment of farm, zoo, and laboratory-housed animals, known as the five freedoms (Box 1.1), may far exceed what is being provided for many household pets.

Box 1.1 Five freedoms of animal welfare

1. Freedom from hunger and thirst – ready access to water and a diet to maintain health and vigor
2. Freedom from discomfort – providing appropriate environment
3. Freedom from pain, injury, or disease – prevention or prompt diagnosis and treatment
4. Freedom to express normal behavior – providing space, environment, and companionship
5. Freedom from fear and distress

Source: UK Farm Animal Welfare Council (www.fawc.org.uk).

Box 1.2 Veterinary / technician behavior associations and certification groups

Veterinary and technician behavior associations

American Veterinary Society of Animal Behavior	avsabonline.org
Companion Animal Behaviour Therapy Study Group	cabtsg.org
European Society of Veterinary Clinical Ethology	esvce.org
Society of Veterinary Behavioral Technicians	svbt.org
Australian Veterinary Behaviour Interest Group	ava.com.au

Veterinary and technician behavior certification groups

American College of Veterinary Behaviorists	dacvb.org
European College of Animal Welfare and Behavioural Medicine	ecawbm.org
Australian College of Veterinary Scientists	acvsc.org.au
Academy of Veterinary Behavioral Technicians	avbt.net

Many of the commonly reported behavior problems can be attributed at least in part to animals being adopted and left at home alone while family members are working or at school, with few outlets for the pet to display its normal behavior repertoires. By applying the five freedoms of animal welfare to our family pets, behavioral and physical well-being could be dramatically improved.

While behavioral education of veterinarians should be considered critical, behavioral education is still lacking at a majority of veterinary colleges in North America and around the world. Therefore veterinary practices must actively seek continuing education opportunities for both veterinarians and staff. Specialty training and residency programs might be a consideration for those wishing to seek board certification as a veterinary behaviorist or veterinary behavioral technician (Box 1.2). However, veterinarians and technicians need not become specialists to be able to offer behavioral advice competently. This book is intended to provide concise and practical information for the busy veterinarian. Since the field of behavior is constantly evolving, veterinarians and staff must continue to seek continuing education opportunities in behavior to gain a greater understanding of the field. An excellent start would be to join at least one behavioral interest group: American Veterinary Society of Animal Behavior (AVSAB), Society of Veterinary Behavioral Technicians, Companion Animal Behavior Therapy Study Group, European Society of Veterinary Clinical Ethology, or the Australian Veterinary Behaviour Interest Group (Box 1.3). Membership in these organizations generally provides access to newsletters containing updates on future continuing education opportunities. Most major conferences also provide behavior continuing education for veterinarians and technicians. Also be certain to stock your clinic library with books and journals on the behavior of dogs and cats.

An excellent place to begin staff training is to collect the resources used in the practice for client education. Both staff and veterinarians can then familiarize themselves with this information so that they gain the expertise to discuss each

Box 1.3 Continuing education opportunities

Membership and attendance at American Veterinary Society of Animal Behavior scientific session (in association with American College of Veterinary Behaviorists (ACVB)) – avsabonline.org

Membership and attendance at European Society of Veterinary Clinical Ethology scientific session (in association with European College of Animal Welfare and Behavioural Medicine) – esvce.org

Membership and attendance at Companion Animal Behaviour Therapy Study Group scientific session – cabtsg.org

Residency or specialty training program in veterinary behavior with ACVB – dacvb.org

Residency program in veterinary behavior with European College of Animal Welfare and Behavioral Medicine (behaviour) – ecawbm.org

Animal behavior journals: *Journal of Veterinary Behavior*; *Clinical Applications and Research*; *Applied Animal Behavior Science*; *Journal of Applied Animal Behavior Science*

Attending behavioral continuing education seminars and workshops at veterinary conferences

Computer bulletin boards with online courses, e.g., Veterinary Information Network, Veterinary Partner

Workshops and short courses offered by ACVB, ECAWBM, Society of Veterinary Behavioral Technicians, Lifelearn, North American Veterinary Conference Post Graduate Institute (tnavc.org), Western Veterinary Conference Oquendo Center (oquendocenter.org), Lifelearn (lifelearn.com) and Centre for Veterinary Education, University of Sydney www.cve.edu.au

Also see our list of reading and resources in Appendix B

Box 1.4 Staff and client behavior resources

American Animal Hospital Association client education behavior handouts – aahanet.org

American Association of Feline Practitioners behavior guidelines – aafponline.org

American Veterinary Society of Animal Behavior position statements – avsabonline.org

Animal Behavior Resources Institute – abronline.org

Association of Pet Dog Trainers: How to choose a trainer – position statement on dog-friendly training – apdt.com

Feline Advisory Bureau – fabcats.org

Horwitz D, Mills D (2009) BSAVA manual of canine and feline behavioural medicine, 2nd edn. British Small Animal Veterinary Association, Gloucester, UK – client handouts

Horwitz D, Neilson J (2007) Blackwell's five minute veterinary consult clinical companion, canine and feline behavior. Blackwell, Ames, Iowa – client handouts

Ian Dunbar's World – dogstardaily.com

Landsberg G, Horwitz D. Behavior Advice for Clients 2012 – lifelearn.com

Ohio State University Indoor Pet Initiative – indoorpet.osu.edu

topic, which can then be supported by the reading and resource material (Box 1.4). Also review client education sites on the internet and provide links to those that you consider useful from your clinic website. For a comprehensive list of client and veterinary resources, see Appendix B.

Providing behavioral services in practice

Behavioral problems are best prevented. Should problems begin to arise, the greatest success is likely to be achieved

with early intervention. Therefore, particular attention should be placed in the preventive management program as well as monitoring behavioral health at every veterinary visit. In fact, since any change in behavior could be due to underlying medical problems, behavioral screening at each visit should be a critical component of every veterinary visit (see [Chapter 6](#)). The use of a questionnaire helps to ensure that nothing is missed ([Forms 1.1 and 1.2](#)).

A wide range of behavior services can be offered at each veterinary clinic. These are highlighted in [Table 1.1](#). Each has the effect of promoting healthy behavior in pets and reinforces the notion that the veterinary practice is a complete healthcare provider.

Services should be divided into: (1) those that are intended to improve the bond and prevent the development of behavior problems; (2) screening and monitoring for changes in behavior both as a component of medical healthcare as well as for early identification and intervention for emerging behavior issues; and (3) dealing with pets with problem behaviors.

Successful implementation might best be achieved using a team approach, in order to utilize best the time and expertise of office staff, nurses, technicians, and veterinarians.

Practitioners should focus on providing advice that might prevent problems that lead to relinquishment and surrender, and those problems that are most commonly reported by pet owners. The distribution of cases at referral practices represents those that are less common but more likely to require more indepth consultation services (or referral) ([Tables 1.2 and 1.3](#)).

Pet selection counseling

Many problems can be prevented and the bond between pet and owner improved by helping owners choose a pet that best suits their family and household (see [Chapter 3](#)). In addition, a consultation in advance of obtaining a pet provides an opportunity to guide owners in how best to introduce the pet into the new home.

Preventive counseling – setting the pet up to succeed

The bond between the pet and the family seems to be most fragile in the first 6 months of the relationship. All veterinarians should therefore have enough knowledge of normal and abnormal behavior to know when and how to give advice, and when and where to refer. The majority of relinquished pets are not puppies and kittens. The period between 6 and 24 months of age is generally considered a common period for relinquishment of dogs and cats. This supports the importance of focusing on offering behavior advice during each new pet visit and through the first year of ownership. Puppies with one or more veterinary visits may be at lowered risk for relinquishment, and the provision of educational material was associated with lower relinquishment in cats.^{1,2} You'll find it helpful to place a checklist of behavior topics to discuss in the file of each new puppy or kitten. This will help ensure that all topics are covered over the course of the puppy and kitten visits (see [Box 4.10](#) and client form #12, printable version available online). Prioritizing topics to cover at each visit and providing the family with a resource

list of books, DVDs, and websites, along with handouts or pamphlets, helps to complement the advice given at each visit while preventing information overload ([Box 1.4](#) and [Appendix B](#)).

During the socialization (or sensitive) period, between 3 and 12 weeks of age in dogs and 3 and 7 weeks of age in cats, is a time when pets are most amenable to developing appropriate social behavior to their own species as well as other species (e.g., humans) and to acclimatization to new locations, objects, and sensory experiences (see [Chapter 4](#)). Ample opportunities for a variety of social and environmental experiences must be provided during this period.

Families should be taught to focus primarily on positive ways to achieve desirable behaviors by encouraging and reinforcing such behaviors, while preventing undesirable behavior to ensure that bad habits do not develop. They should also understand the normal behavior of the species in order to be able to provide outlets for all of the pet's behavioral needs. Punishment should focus primarily on taking away something of value (i.e., negative punishment). Positive punishment inflicted by the owner (the application of something unpleasant) should be avoided wherever possible (see [Chapters 4 and 5](#) for details).

Another focus of preventive counseling should be on those behaviors that most commonly lead to relinquishment. Since inappropriate elimination is a risk factor for relinquishment in both dogs and cats, veterinarians should be proactive in providing advice on housetraining puppies and litter training cats. In one study, 31% of people surrendering dogs believed that it was helpful to shove the dog's nose in the excrement and another 11.4% were uncertain.³ Owners surrendering dogs also reported aggression, destructiveness (chewing, digging, scratching), escaping, disobedience, and hyperactivity. For cats, destructive behavior (scratching), disobedience, not being friendly, demanding behavior, and overly active behavior have all been associated with relinquishment. Therefore, these should be topics on which veterinarians and staff focus their preventive counseling efforts.

Behavior products

The veterinary clinic can offer products that encourage and support desirable behavior and prevent behaviors that are undesirable. These might include toys for social play (chasing and tug games), object play (food manipulation and chew toys), and body and head control training devices. In addition, stain and odor control products are likely to be needed during the housetraining process, and spray deterrent devices might help to prevent undesirable behavior. Car restraint devices, cat litter, crates, and behavior management products such as calming caps and muzzles might also be offered for sale.

Surgery

Ovariohysterectomy will eliminate the cycling and accompanying sexual behaviors of female dogs and cats, including urine marking in cats and pseudopregnancy in dogs. One study showed that castrating male dogs may reduce urine marking, mounting, and roaming in 70–80% of dogs; however only 25–40% of owners reported resolution in these behaviors.⁴ In this study aggression toward family dogs

Form 1.1 Canine behavior checklist (client form #2, printable version available online)

Name: _____ Today's date: _____

Pet's name: _____ Age: _____ Sex: M/F Neutered: Y/N

Please use the following scoring system: Scoring: 0 – never; 1 – rarely; 2 – sometimes; 3 – frequent; 4 – all the time

	Score	When began?
1. Fear (no aggression): People / Locations / Situations / Noises People familiar _____ unfamiliar _____ Animals familiar _____ unfamiliar _____ Car rides _____ Veterinary clinic _____ Surfaces _____ Storms _____ Fireworks _____ Vacuum _____ Other: _____ Describe: _____ _____		
2. Growl / threaten / bite unfamiliar people _____ Describe: _____		
3. Growl / threaten / bite family members _____ Describe: _____		
4. Growl / threaten / bite other family pets _____ Describe: _____		
5. Growl / threaten / bite unfamiliar dogs _____ Describe: _____		
6. Mouthing / grabbing / play biting _____ Describe: _____		
7. When left alone: anxious _____ destructive _____ vocal _____ soils _____ salivates _____		
8. Soiling indoors: urine _____ stools _____ Left alone: _____ Family at home _____ Describe: _____ _____		
9. Destructive: Chews _____ Digs _____ Other: _____		
10. Steals: garbage _____ food _____ toys _____ Other: _____ If yes, will he drop/give? Y N Is he possessive/aggressive? Y N		
11. Barking at doors, windows, fences? _____ Other: _____ Describe: _____ _____		
12. Excitable/won't settle _____ Jumps on people _____ Gets on furniture _____/counters Describe: _____ _____		
13. Difficult to train _____ Ignores commands _____ Pulls on walks _____ Describe: _____ _____		
14. Repetitive behaviors – Chews/licks self _____ Chases tail _____ Licks/suck _____ Staring _____ Circling _____ Snaps at air _____ Chases lights _____ Other _____ Describe: _____ _____		
15. Mounting other dogs _____ Household objects _____ Masturbates _____		
16. Chases people _____ animals _____ cars _____ bikes _____ wildlife _____ Other: _____ Describe: _____ _____		
17. Ingestive – Eating: Voracious / gulps _____ Picky _____ Excessive drinking _____ Eats stools _____ Eats other nonfood items (pica) _____ Describe: _____ _____		
18. Attention seek _____ Clingy _____ Describe: _____		
19. Wakes at night _____		
20. Other / describe: _____ _____		

If you need assistance with any of the above – indicate # _____

Form 1.2 Feline behavior checklist (client form #6, printable version available online)

Name: _____ Today's date: _____

Pet's name: _____ Age: _____ Sex: M/F Neutered: Y/N

Scoring: 0 – never; 1 – rarely; 2 – sometimes; 3 – frequent; 4 – all the time

	Score	When began?
1. Fear / avoids (no aggression): People familiar _____ unfamiliar _____ Animals familiar _____ unfamiliar _____ Car rides _____ Veterinary clinic _____ Surfaces _____ Storms _____ Fireworks _____ Vacuum _____ Other: _____ Describe: _____ _____		
2. Threaten / bite unfamiliar people: _____ Describe: _____ _____		
3. Threaten / bite family members: _____ Describe: _____ _____		
4. Threaten / bite family pets: _____ Describe: _____ _____		
5. Threaten / bite unfamiliar animals: _____ Describe: _____ _____		
6. Clingy / overly affectionate _____ Avoids / dislikes contact _____		
7. Soiling: Urine vertical (e.g., walls) _____ Urine horizontal (e.g., floors) _____ stools _____ Describe: _____ _____		
8. Destructive: scratching _____ play _____ climbing / perching _____ Describe: _____ _____		
9. Destructive: Chew ____ Suck ____ Lick ____ Eats nonfood items (pica) _____ Describe: _____ _____		
10. Steals food _____ garbage _____ Other / Describe: _____		
11. Ingestive: voracious / gulps / overeats _____ picky eater _____ excessive drink _____ eats nonfood items _____ Describe: _____ _____		
12. Behavior when alone: Anxious ____ Destructive _____ Soils _____ Other: _____		
13. Activity: decreased / sleeps more _____ Night waking _____ Overactivity sessions _____		
14. Chasing / predation – people _____ other cats _____ other / describe: _____		
15. Compulsive/repetitive staring _____ Rippling skin (hyperesthesia) _____ Overgrooming / hair loss _____ tail chasing _____ Other: _____		
16. Excessive vocalization _____		
17. Roaming _____ Masturbation _____		
18. Climb / perch: counters _____ drapes _____ furniture _____ trees _____ Other: _____		
19. Other _____		

Please indicate if you would like some help changing any of these behaviors (list numbers)

Table 1.1 Behavioral services

Approach	Considerations
Preselection consultation	Consult with prospective pet owners to help them select an appropriate pet for their circumstances. Advise about health, behavior, nutrition, and introducing the pet into the home
Preventive counseling	Take advantage of each puppy and kitten visit to counsel owners as to normal pet behavior, socialization, and how to train desirable behaviors and prevent undesirable ones. Provide handouts, resource lists, and web links
Puppy and kitten socialization classes	Encourage owners to participate in puppy and kitten classes to enhance early socialization and provide training advice. Consider offering these services in your practice
Behavior management products	Recommend, demonstrate, and supply control devices (head halters, body harnesses), enrichment toys, and devices to correct undesirable behaviors, such as odor counteractants and motion detection devices
Basic counseling – early intervention	As puppies and kittens mature, undesirable behaviors may develop. Early identification and timely advice can lead to successful resolution of many problems before they escalate into more difficult, serious, or refractory cases
Behavioral screening	Screening for any change in behavior at every visit is essential for early identification of signs that there might be an emerging behavior problem or even the initial signs of a medical problem
Surgery	Neutering can prevent estrous cycles in females and may reduce androgen-influenced behaviors in males, including marking, roaming, masturbation, mounting, and some forms of aggression Declawing, dental disarming, and devocalization are illegal or unethical in certain jurisdictions. There is controversy as to whether these procedures might be an acceptable alternative to relinquishment in situations when environmental and behavior modifications are unsuccessful or impractical
Behavioral consultations	Every pet with a behavior problem must have a full diagnostic workup since medical problems could be a cause or contributing factor and behavioral signs could be the first or only signs of illness The behavioral diagnosis primarily focuses on history taking. A movie clip, interactive discussion with the owner, observation of the pet and owner, and a written history can all be utilized Make sure you feel competent in performing behavior counseling for advanced problems, such as aggression or phobic behaviors. If in doubt, refer
Pharmacological management	Drug therapy (as well as natural alternatives) can be an important component or a necessity for the successful resolution of many behavior problems such as when there is an inordinate amount of fear, anxiety, arousal, impulsivity, or behavioral pathology. A therapeutic response trial might also be warranted

Table 1.2 Behavior problems in dogs

Most common problems according to owners ¹	Most common problems at referral practices (Canada, USA, Australia) ²	Problems leading to increased risk for relinquishment ³	Problems leading to shelter surrender ⁴
Jumping up	Aggression	Aggression to pets or people	Hyperactivity
Barking	Anxiety	Barking	Housoiling
Begging for food	Separation anxiety	Destructive behavior	Biting
Jumping on furniture	Fear/phobia	Inappropriate elimination	Chewing
Digging	Housoiling	Excitability/unruliness	Fearful
Chewing	Unruly		Barking
Fear of noises	Repetitive/compulsive		
Overprotective (family/property) Escapes from yard	Barking* Destructive Cognitive dysfunction Miscellaneous (roam, escape)		

*Barking is the fifth most common sign in Australian referral but least common in North America.

¹Campbell WE. The effects of social environment on canine behavior. Modern Vet Pract 1986;67:113–5.

²Denenberg S, Landsberg G, Horwitz D, et al. A comparison of cases referred to behaviorists in three different countries. In: Mills D, Levine E, Landsberg G, et al, editors. Current issues and research in veterinary behavioral medicine. West Lafayette, Indiana: Purdue Press; 2005.

³Patronek GJ, Glickman LT, McCabe GP. Risk factors for relinquishment of dogs to an animal shelter. J Am Vet Med Assoc 1996a;209:572.

⁴Miller DD, Staats SR, Partlo C, et al. Factors associated with the decision to surrender a pet to an animal shelter. J Am Vet Med Assoc 1996;209:738–42.

Table 1.3 Behavior problems in cats

Most common problems seen by owners in cats housed indoors ¹	Most common problems at referral practices (Canada, USA, Australia ²	Problems leading to increased risk for relinquishment ³	Problems leading to shelter surrender ⁴
Anxiety	Elimination/all	Elimination	Fearfulness
Scratching furniture	Elimination/soil	Scratching	Scratching
Feeding problems	Aggression	Aggression	Elimination
Aggression	Elimination/markings		Objects to being held
Inappropriate urination	Compulsive/hyperesthesia		
Inappropriate defecation	Vocalization/night wake		
	Medical		

¹Heidenberger E. Housing conditions and behavioural problems of indoor cats as assessed by their owners. *Appl Anim Behav Sci* 1997;52:345–64.

²Denenberg S, Landsberg G, Horwitz D, et al. A comparison of cases referred to behaviorists in three different countries. In: Mills D, Levine E, Landsberg G, et al, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue Press; 2005.

³Patronek GJ, Glickman LT, Beck AM, et al. Risk factors for relinquishment of cats to an animal shelter. *J Am Vet Med Assoc* 1996b;209:582.

⁴Miller DD, Staats SR, Partlo C, et al. Factors associated with the decision to surrender a pet to an animal shelter. *J Am Vet Med Assoc* 1996;209:738–42.

or family members was reduced in 30% of dogs, while aggression toward unfamiliar dogs or intruders was reduced in 10–20% of dogs.⁴ Castration in cats appears to reduce urine odor and sexually dimorphic behaviour traits such as roaming, fighting, and urine marking and perhaps makes them more docile.

Screening

Assess behavior at every visit. Whenever behavior signs are identified the first consideration is whether there might be a medical cause of the behavioral signs, since a change in behavior is often the first or only sign of many medical problems. If medical factors have been ruled out, early identification of undesirable behavior allows for prompt intervention before the problem becomes an established habit.

Behavior problem counseling

Providing behavior consulting services with pets with emerging and existing problems can be a challenge for those practitioners who do not have sufficient training. As staff members and veterinarians become more interested and competent at managing and treating behavior cases, the types of cases that are handled in the clinic can be gradually expanded. This book is intended to help assist you in this process. In the interim, referral should be considered for any behavior issue that is beyond the scope of what can be handled in the practice.

Board-certified animal behaviorists are veterinarians certified by ACVB and/or ECAWBM. Veterinarians interested in board certification will need to enroll in a residency or an approved specialty training program. Details on specialty training can be found on the College websites (www.dacvb.org or ecawbm.org). In addition, there are numerous veterinarians who are experienced and competent behaviorists who have not sought board certification. AVSAB provides a directory of veterinarians offering behavior consulting and practitioners who wish to refer cases should validate the expertise of the consultant before referral. When cases are referred to

veterinary consultants, they can legally take responsibility for the diagnosis and drug dispensing. In addition they must meet the ethical and legal standards of their veterinary licensing body and maintain communication with the referring veterinarian.

Applied animal behaviorists must have a postgraduate degree in behavior as well as sufficient clinical experience to achieve certification from the Animal Behavior Society. When referring to an applied animal behaviorist, coordinated case supervision with the referring veterinarian is essential to rule out medical problems and behavioral illnesses and to determine whether drugs might be indicated. Although there are a plethora of other organizations that also profess expertise in behavior counseling, their training is less rigorous, the science often questionable, and they have no formal licensing or certification oversight. Therefore, caution and close scrutiny of credentials should be exercised before referral. Also be certain not to confuse trainers, who can be an invaluable resource in helping to implement a training and behavior modification program, with a behaviorist who will fully evaluate the problem and help to determine the prognosis and the best possible management and treatment options for the pet, home, and family.

Staff utilization and training – the team approach

Properly trained veterinary technicians, nurses, assistants, and front-office staff can provide owners with a wealth of information and can interface with clients on routine matters. The team approach can utilize the strengths, education, and experience of both veterinarians and staff to provide a full range of behavior services. It instills confidence in the clinic team and increases the probability of owner compliance. In addition, a trainer who works either within the veterinary hospital or as an external resource can play an integral role in both preventive counseling and training by helping to implement a behavior treatment program (Table 1.4).

Table 1.4 Roles of trainers, technicians, applied animal behaviorists, and veterinarians in behavior counseling

Role of trainers	Teaching appropriate behavior, including puppy-training classes, flyball, agility Preventive counseling – setting the pet up to succeed Correcting normal but undesirable behavior – response substitution (e.g., sit instead of jumping up during greetings) Techniques and product implementation, e.g., clicker training, head halter For behavior disorders: work with owner to implement program after veterinary diagnosis and consultation Not: treating behavior disorders until after veterinary evaluation Not: making a diagnosis Not: drug advice
Role of behavioral technicians	All trainer roles plus: Problem screening Management advice until time of consult Working with veterinarian to take history, design behavior program Working with client to implement program Follow-up/liaison with behaviorist Not: making a diagnosis Not: recommending/prescribing drugs
Role of certified applied animal behaviorist	All roles of trainer or designate to trainer plus: Diagnosis – normal versus abnormal Treatment plan
Role of veterinarians	All roles of trainer and technician or designate to trainer or technician plus: Diagnosis – medical Diagnosis – normal versus abnormal, pathology Treatment plan and medication if indicated or refer Continue case and drug oversight if referral to behaviorist who is not a veterinarian

In order to implement a team-oriented approach effectively it will be necessary to determine which staff members are capable of providing each service (Table 1.1). Having either a veterinarian or technician serve as the practice's behavior coordinator can help to ensure the oversight, training, education, competency, and roles of each member of the behavioral team.

Reception and office staff

Staff can take an active role in inquiring as to whether the pet owner has any behavioral concerns. Just as your reception team is trained to handle and triage the wide range of medical issues with which they are presented, they should also be trained as to how to address owners with behavior questions. Reception staff should document any problems in the record but should avoid giving quick-fix suggestions or referrals until the veterinarian has assessed the problem. With proper training, staff members can develop the skills necessary to offer preventive counseling advice, guidance in the management of normal but undesirable behavior, pet selection counseling, and behavior screening. In addition they can be responsible for distributing resource materials (e.g., pamphlets, web links) and demonstrating behavior products that are recommended by the veterinarian (Table 1.1).

Technicians

A behavioral technician can be an invaluable resource both for the oversight of the clinic's behavioral services as well as to provide behavioral advice and support in those areas that do not require veterinary assessment (Table 1.4). With the recent recognition as a technician specialty, veterinary technicians can now pursue certification as veterinary technician specialist in behavior (avbt.net).

1. The technician can take primary responsibility for preselection advice, preventive counseling, puppy and kitten socialization classes, behavior products, management issues for emerging problems, and behavioral screening (Table 1.1). Alternately, these services could be designated to staff members who have sufficient training and expertise. When the clinic has sufficient space and a technician or staff member has the necessary skills, obedience training could be offered as a clinic service. Otherwise, the clinic should identify one or more reputable trainers to whom families can be referred.
2. For behavior problems, the behavioral technician can also play an important role in recommending behavior consultations, by discussing the protocol and scheduling the visit. During the consultation the technician can work with the veterinarian in history taking, developing the treatment plan and helping the client implement techniques, products, and the treatment program. The technician might also provide continued training and support between visits either at home or in the clinic and should have primary responsibility for case follow-up to liaise with the veterinarian until the next visit is required (Table 1.4).

Veterinarians

Behavior problems present many challenges. When presented with any change in behavior, the veterinarian's first goal is to determine if there are any medical issues or stress that might be contributing to the problem. Problems that are diagnosed as abnormal or pathologic should be treated in clinic or by referral to a veterinary behaviorist. If referrals are made to anyone other than a veterinarian, the practitioner must continue oversight of the case, including

any decisions with respect to drugs. Another alternative would be to use a veterinary behavior service that can guide you through the diagnosis and treatment of the case with telephone or online support (Dr. Landsberg and Dr. Hunthausen offer this service). This text outlines protocols for diagnosis, history taking, behavioral management, behavior modification, and drug therapy for those veterinarians who want to take a more active role in behavior counseling.

Trainers

While some practices may have staff who can offer training services in the clinic, most practices will have some need for referral of cases to trainers both for preventive management and training as well as for the implementation of the program discussed at a behavioral consultation. Since dog training is an unlicensed and unregulated profession, how do you decide where to send your clients? The focus should be on effective, dog-friendly training that utilizes primarily positive reinforcement, negative punishment (removal of something desirable), and only rarely positive punishment or negative reinforcement that does not evoke pain or excessive fear (apdt.com). The AVSAB website (avsabonline.org) has position statements on how to choose a trainer, how to choose a behavior specialist, and the perils of punishment. Trainers should have a basic education in psychology and learning principles, utilize humane reinforcement-based methods, and avoid the use of force or confrontation. In fact, the use of confrontational techniques, from yelling “no” to “alpha roll-overs” on aggressive dogs, often increases aggression. Dogs trained with reinforcement alone are likely to show less avoidance and aggression than dogs trained with reinforcement plus punishment or punishment alone. Positive punishment (application of something unpleasant) may improve some behaviors quickly, but merely serves to stop undesirable behavior rather than train what is desirable (see [Chapter 12](#) for references). In addition, there are animal welfare concerns when training results in pain, discomfort, fear, or anxiety, such as might be the case with corrective techniques or electric stimulus collars. Therefore, avoid trainers who employ aversive stimuli, suggest that food rewards are bribes that do not command “respect,” or who state that behavior problems can be resolved by owner dominance. Effective screening questions could include: (1) does the trainer use prong collars and corrections? (which generally imply a punishment-based approach) and (2) is the trainer comfortable with the use of food rewards, clicker training, and head collars? Finally, observe a training session before suggesting a trainer to ensure training techniques are predominantly positive, and that dogs are not being jerked by collars, forced into positions, struck with hands or implements, or having items thrown at them.

The economics of providing behavioral services

All veterinarians should be performing some behavioral services or they are truly not providing complete client care, and are economically disadvantaging themselves as well. While there are many humanitarian and ethical reasons to

help clients celebrate the human–animal bond, this section will focus on the economics of the service, to demonstrate clearly that practicing good behavioral medicine is also fiscally sound.

The addition of any “profit center” to a veterinary practice depends on the service being able to deliver a “profit.” In contradistinction, providing a “goodwill center” might have client education materials available on a relatively passive basis, but the veterinary hospital remains largely unengaged in the true medical and profit aspects of behavior counseling.⁵ While there are many factors that go into creating a profit center, behavior counseling provides one of the best – encouraging the human–animal bond and the retention of the pet within the family unit. A well-loved pet will typically remain with a family for the rest of its life. With any luck, you’ll provide medical support to have that life extended to its fullest and most productive. The best driver of owner expenditures is the strength of the human–animal bond and those with the strongest bond take their pets to veterinarians more often, are more likely to follow veterinary recommendations (regardless of cost), and are more likely to seek preventive care for their pets.⁶ Maintaining a pet within your veterinary practice, with regular care, for its entire life, is the most economically positive thing you can do for your bottom line.

Even if you never offer indepth behavioral consultations, it is critical to hospital profits for you to counsel owners effectively about preventable problems. One of the easiest things to do is initiate preselection services, so you can advise clients and prospective clients before they ever acquire a pet. Too often, veterinarians wait until owners acquire a pet before they ever see the animal and have the chance to give advice. This is often too late. Before the pet has been adopted is the best time to talk about suitable breeds, places to find a pet, potential breed-related medical issues, and the expectations and responsibilities of pet parenting.⁷ This is also the time to prepare your soon-to-be clients with questions they should pose to the pet seller, things they should look for in a prospective pet (and its parents), and instructions on medical information and samples they should bring to their first office visit. In some cases, the family may decide, based on your advice, that it is not the right time and circumstances to adopt a pet. You won’t have lost a client – you will have gained a potential future client who will be a better owner when the time is right. Even if you decide not to charge for this service, providing this service will generate increasing ancillary revenues over time. This is the least expensive public relations and marketing opportunity that you will ever have. However, you can also charge for the service and consider subtracting the fee from the cost of the pet’s first visit, as an incentive for them to return. Once again, profit in a veterinary hospital is not dependent on a one-time sale of services: lifelong quality care and the ability to deliver services over the long term are always the best business decisions.⁸

Another venue for adding behavioral services involves encouraging proper socialization, habituation, and training. While this is covered in more detail within other chapters of the book, realize that these are critical factors in forging a lifelong bond between owner and pet. Since veterinarians examine pets for other medical purposes during the critical socialization period and afterward, providing suitable

instructions regarding socialization, habituation, and training is a natural extension of regular veterinary services. This is also an excellent opportunity to offer services such as puppy and kitten socialization classes, basic training, and even life skills training (brushing teeth, trimming nails, cleaning ears, basic grooming) that make pets more used to being handled, which in turn make pets better patients that are used to being manipulated (e.g., to examine ears, check teeth, and perform venipuncture). It is reasonable to assume that a pet that will easily allow a physical examination is more likely to receive a complete physical examination. Conversely pet owners, especially cat owners with indoor-housed pets, might delay or entirely avoid veterinary visits if the situation is too traumatic for the owner or the pet. Since veterinary revenues are dependent on being able to examine, diagnose, and treat, providing these behavioral services allows more patients to benefit willingly from your medical expertise. Best of all, from a profit standpoint, most of these services can be performed by well-trained paraprofessional staff, so they are extremely cost-effective for the hospital to provide.

Another important consideration is to detect behavioral problems early, when they can be most easily managed. Many surveys have documented that owners don't always share information about behavioral problems with their veterinarians. It is therefore important to query owners regularly specifically about behavior problems during any scheduled examination, food or accessory sale, prescription refills, or any other opportunity that avails itself. This is something to which all staff should be alerted. Since many animals will be euthanized for behavioral problems, perhaps even more than from medical conditions, do not underestimate the value of detecting behavioral problems early and addressing them immediately and completely.

Although it has been difficult to track, it is likely that point-of-purchase displays for collars, leads, halters, and various training devices can provide consistent revenue streams for a veterinary hospital. This is especially true if doctors and staff regularly reinforce training and behavior issues and can provide guidance as to how these products can be used. In addition, with the increased attention to enrichment, offering a wide range of quality enrichment toys can enhance the pet's behavioral health and perhaps increase revenue generation. Despite their connotations, humane basket-type muzzles may also be a useful product for many pets and owners. When stocking products for retail sales, it is important to remember that these are commodities also available from other nonveterinary retail outlets and they must be priced competitively.

Dealing with problems such as inappropriate elimination in single-cat households, coprophagia, or early cognitive dysfunction evaluation should be routine for the general practitioner. The logical first step involves doing a complete medical workup to discern potential medical contributions to the problem and to investigate organic causes. There are safe medical therapeutic options for these types of disorders, making them very suitable for general veterinary practices.

While many behavioral problems can be successfully managed in general practice, the economics of providing advanced behavioral counseling are not nearly as enticing as the services already mentioned. Dealing with severe aggression, phobias, and compulsive behaviors cannot be managed

within typical scheduled appointments and relies almost entirely on very direct veterinary involvement. This can be problematic for primary-care practices, because few are set up to charge based on billable hours. If you would like to tackle some of these tough conditions, and feel you have the expertise to do so, be prepared to bill in multiples of your typical total clinical examination transaction charge, or create a set fee based on the likely time required for the consultation. The average hourly income from behavioral cases should approximate at least the amount that would be received from seeing medical patients during that same time. If you receive x as the average transaction charge for a routine examination visit (i.e., the average transaction charge is often 2–3 times the amount of the actual office visit charge) and you can typically accommodate y such visits in an hour, expect to charge xy for every hour of anticipated behavioral counseling – typically 2–3 xy for most initial behavioral sessions (e.g., inappropriate elimination, compulsive disorders, separation anxiety), and 3–4 xy for aggression, just based on the time commitment. That is, calculate the revenue you typically generate from appointments on an hourly basis and prepare to recoup at least that same amount over the prolonged time it takes to perform a behavioral consultation. So, if the veterinary practitioner typically schedules 3–6 office appointments per hour and a behavioral consultation is believed to require 2 hours, the income from that visit must at least approximate the total transaction charges for the 6–12 office visits that could have been scheduled during the same time period, as well as accounting for the time needed to review patient information prior to the visit. Given that there are fewer laboratory testing and pharmaceutical dispensing opportunities with behavior cases compared to other medical cases, if the behavior appointment charges are not adequate, the veterinarian will be losing revenue by seeing complicated behavioral cases (Table 1.5). One option for primary-care practices is to identify cases in need of further counseling, schedule a 20–30-minute appointment to deal with basic behavior modification issues, conduct a thorough physical examination, perform baseline laboratory evaluation, and provide constructive safety advice to the family as a prelude to the behavioral referral, including reviewing the behavioral questionnaire that the behavioral therapist will surely want completed. This saves time for the client and behavior specialists, identifies potential medical issues that will need to be addressed, and maintains these behavioral consultations as a revenue source for primary-care hospitals.⁹

Reality check

This fee is not attained in most instances, even by many board-certified behaviorists, so it is often best for primary-care practitioners to concentrate on preventive and routine behavioral issues and to refer complicated cases.

Follow-up visits need to be billed similarly, but even behaviorists have a difficult time getting clients back in for recheck visits. Accordingly, one approach is to charge an initial consultation fee that bundles in that first visit and at least one re-evaluation visit. If the client does not return for the behavioral visit, the amount can be applied to a telephone re-evaluation. While clients are often amenable to telephone re-evaluations, it is often difficult to collect for this

Table 1.5 Example of calculating fees for a behavioral consultation (USA)*

	20–30 minutes	1 hour	2 hours	3 hours	4 hours
Price an initial behavioral visit should be	\$125–188	\$375	\$750	\$1125	\$1500
*Based on the following: regular office visit charge = \$45; average transaction charge (ATC) = \$125; regular appointments seen per hour = 3. Example: Price for a 2-hour behavioral visit should be: 2 hours × 3 regular visits/hour × \$125 (ATC) = \$750.					

service successfully if you have not collected the amount in advance.

If you decide to handle some of your behavior cases as house calls, your house-call behavioral charges should reflect the total time you are not available to see other cases, or bill separately for consultation, travel time, and vehicle allowance. Additional fees need to be charged for travel time when the consultation is a house call, including total time unavailable for seeing other patients, as well as transportation-related charges. Ultimately, the fees that are charged will depend on the demographics of the area, the perceived value of a behavior consultation for a pet, and the motivation of the hospital to provide such services.

Handling advanced behavioral cases, fitting them into a standard veterinary schedule, and billing clients fairly for the visits and follow-up is a difficult task. Even though the charges may seem high compared to a regular short office visit, it may take up to 3 hours of professional time, there are liability concerns for safety of not only the owner and staff, but also those in your reception area, and you will likely deal with ongoing communications for which billing is difficult. Using current econometric evaluations of standard veterinary practices, advanced behavioral consultation is not one of the better profit centers to incorporate into a busy primary-care practice. For most veterinarians in primary-care practice, referring these cases to a trained veterinary behaviorist makes much more sense economically. The most profitable behavior services for the general veterinary practice involve preventive services, and managing cases that require a thorough medical workup and less intensive behavioral modification regimes.

Pet relinquishment, the bond, and the need for counseling services

While the initial association between pet and owner was probably utilitarian, by the latter half of the 20th century, many households considered pets as family members. A combination of a loving home and advances in veterinary healthcare (from diets and vaccines to new diagnostic technologies) has had a positive effect on improving both pet health and longevity. However, those animals that fail to create a strong bond with their adopted families often suffer a much different fate. In fact, millions of animals are abandoned or euthanized each year, most for nonmedical reasons.

There are myriad reasons why people acquire a dog or cat and then decide it just doesn't fit their lifestyle. Empirical evidence suggests that this is not a rare occurrence. Statistics released by the National Council on Pet Population Study and Policy (www.petpopulation.org) reveal that only a relatively small proportion of dogs entering member shelters are

Table 1.6 The top 10 reasons for pet relinquishment to shelters in the USA

Dogs	Cats
Moving	Too many in house
Landlord issues	Allergies
Cost of pet maintenance	Moving
No time for pet	Cost of pet maintenance
Inadequate facilities	Landlord issues
Too many pets in home	No homes for littermates
Pet illness(es)	Housesoiling
Personal problems	Personal problems
Biting	Inadequate facilities
No homes for littermates	Doesn't get along with other pets
Reproduced from www.petpopulation.org/topten.html , accessed 27 April, 2011.	

ever reclaimed by their owners; the results are even worse for cats. This suggests that many dogs and cats in shelters are not lost with owners searching diligently for them – they are abandoned and often destined for euthanasia. It is thus very important to determine the causes of relinquishment (Table 1.6) and intervene before a pet is removed from its family home.

Pet behavior problems all too often result in the demise of the pet. Millions of pets are euthanized at shelters alone, with most due to nonmedical reasons. Behavior problems are a common reason for shelter surrender in dogs and cats, as well as being a common reason for owners to seek euthanasia for pets at veterinary clinics. Since the pet's behavior is one of the principal factors in forging a strong pet-owner bond, it is not surprising that undesirable behavior can weaken the bond, leading to a decreased commitment in pet care and an increase in relinquishment. The veterinary profession must be a leader in reversing this trend. It is clear that with timely and accurate behavioral advice, fewer pets will meet premature and untimely deaths, and a significant cause of client loss can be eliminated.

There are many reasons why veterinarians should be enthusiastic about behavior counseling. In addition to the altruistic reason of bettering the lives of pets and owners, there are also solid economic reasons for embracing these concepts. Fewer pets will be rejected, abandoned, or destroyed. The benefits are obvious to all: by saving the pet's life and improving the bond between owner and pet, the owner's commitment to, and level of, pet care should be greatly enhanced.

References

1. Patronek GJ, Glickman LT, McCabe GP. Risk factors for relinquishment of dogs to an animal shelter. *J Am Vet Med Assoc* 1996a;209:572.
2. Patronek GJ, Glickman LT, Beck AM, et al. Risk factors for relinquishment of cats to an animal shelter. *J Am Vet Med Assoc* 1996b;209:582.
3. Salman MD, Hutchinson J, Ruch-Gallie R, et al. Behavioral relinquishment of dogs and cats to 12 shelters. *J Appl Anim Welfare Sci* 2000;3:179–201.
4. Neilson J, Eckstein RA, Hart BL. Effects of castration on problem behaviors in male dogs with reference to age and duration of behavior. *J Am Vet Med Assoc* 1997;211:180.
5. Hunthausen W. Seven steps to a profitable behavior program. *Vet Econom* 2010;51:23–30.
6. Lue TW, Pantenburg DP, Crawford PM. Impact of the owner–pet and client–veterinarian bond on the care that pets receive. *J Am Vet Med Assoc* 2008;232:531–40.
7. Ackerman L. The genetic connection. A guide to health problems in purebred dogs, 2nd ed. Loveland, CO: AAHA Press; 2011.
8. Ackerman L. Five-minute veterinary practice management consult. Ames, Iowa: Blackwell; 2007.
9. Radosta L. Incorporating behavioral medicine into general practice. *Compend Contin Educ Vet*, 2009;31:258–63.

Recommended reading

- Ackerman L. Business basics for veterinarians. New York: ASJA Press; 2002.
- Alexander SA, Shane SM. Characteristics of animals adopted from an animal control center whose owners complied with a spaying/neutering program. *J Am Vet Med Assoc* 1994;205:472.
- Bain M. Not all animal behaviorists are created equal. Available online at: <http://www.nxtbook.com/nxtbooks/advanstar/vm0808/#/10>.
- Blackwell EJ, Twells C, Seawright A, et al. The relationship between training methods and the occurrence of behavior problems, as reported by owners, in a population of domestic dogs. *J Vet Behav* 2008;2:207–17.
- Cloud DF. Working with breeders on solutions to pet overpopulation. *J Am Vet Med Assoc* 1993;202:912.
- Denenberg S, Landsberg G, Horwitz D, et al. A comparison of cases referred to behaviorists in three different countries. In: Mills D, Levine E, Landsberg G, et al, editors. Current issues and research in veterinary behavioral medicine. West Lafayette, Indiana: Purdue Press; 2005.
- Gehrke BC. Results of the AVMA survey of US pet-owning households on companion animal ownership. *J Am Vet Med Assoc* 1997;211(2):169.
- Gorodetsky E. Epidemiology of dog and cat euthanasia across Canadian prairie provinces. *Can Vet J* 1997;38:649–52.
- Heidenberger E. Housing conditions and behavioural problems of indoor cats as assessed by their owners. *Appl Anim Behav Sci* 1997;52:345–64.
- Herron ME, Shofer FS, Reisner IR. Survey of the use and outcome of confrontational and nonconfrontational training methods in client-owned dogs showing undesired behaviors. *Appl Anim Behav Sci* 2009;117:47–54.
- Hetts S, Heinke M, Estep DQ. Behavior wellness concepts in veterinary practice. *J Am Vet Med Assoc* 2004;225:506–12.
- Hunthausen W. It's time to offer behavior services. *Vet Econom* 1991;November:52–7.
- Hunthausen W. Behavior problems: find a long-term solution instead of a quick fix. *Vet Econom* 1996;May:39–40.
- Landsberg GM, Shaw J, Donaldson J. Handling behavior problems in the practice setting. *Vet Clin North Am Sm Anim Pract*, 2008;38:951–9.
- Luescher AU, Flannigan G, Mertens P. The role and limitations of trainers in behavior treatment and therapy. *J Vet Behav* 2007;2:26–7.
- Luescher AU, Flannigan G, Mertens P. The role and responsibilities of behavior technicians in behavioral treatment and therapy. *J Vet Behav* 2007;2:23–5.
- Lord LK, Wittum TE, Neer CA, et al. Demographic and needs assessment survey of animal care and control agencies. *J Am Vet Med Assoc* 1998;213:483.
- MacKay CA. Veterinary practitioners' role in pet overpopulation. *J Am Vet Med Assoc* 1993;202:918.
- Miller DD, Staats SR, Partlo C, et al. Factors associated with the decision to surrender a pet to an animal shelter. *J Am Vet Med Assoc* 1996;209:738–42.
- Nassar R, Talboy J, Moulton C. Animal shelter reporting study 1990. Englewood, Colorado: American Humane Association; 1992. p. 5.
- Olson PN, Moulton C. Pet (dog and cat) overpopulation in the United States. *J Reprod Fertil Suppl* 1993;47:433.
- Patrick GR, O'Rourke KM. Dog and cat bites: epidemiologic analyses suggest different prevention strategies. *Public Health Rep* 1998;113:252.
- Patronek GJ, Dodman NH. Attitudes, procedures, and delivery of behavior services by veterinarians in small animal practice. *J Am Vet Med Assoc* 1999;215:1606–11.
- Patronek GJ, Glickman LT. Development of a model for estimating the size and dynamics of the pet dog population. *Anthrozoos* 1994;7:25.
- Patronek GJ, Lacroix CA. Developing an ethic for the handling, restraint, and discipline of companion animals in veterinary practice. *J Am Vet Med Assoc* 2001;218:514–7.
- Posage JM, Bartlett PC, Thomas DK. Determining factors for successful adoption of dogs from an animal shelter. *J Am Vet Med Assoc* 1998;213:478.
- Scarlett J. Reasons for relinquishment of companion animals in United States animal shelters: selected health and personal issues. *J Appl Anim Welfare Sci* 1999;2:41.
- Scarlett JM, Salma MD, New JG, et al. The role of veterinary practitioners in reducing cat and dog relinquishments and euthanasias. *J Am Vet Med Assoc* 2002;220:306–11.
- Seksel K, Mazurski EJ, Taylor A. Puppy socialisation programs: short and long term behavioural effects. *Appl Anim Behav Sci* 1999;62:335–49.
- Strand PL. The pet owner and breeder's perspective on overpopulation. *J Am Vet Med Assoc* 1993;202:921.
- Thornton G. The welfare of excess animals: status and needs. *J Am Vet Med Assoc* 1992;200:660.
- Wenstrup J, Dowidchuk A. Pet overpopulation: data and measurement issues in shelters. *J Appl Anim Welfare Sci* 1999;2:1.
- Zawistowski S, Morris J, Salman MD, et al. Population dynamics, overpopulation, and the welfare of companion animals: new insights on old and new data. *J Appl Anim Welfare Sci* 1998;1:1.

Developmental, social, and communicative behavior

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Introduction

Genetic predisposition, environmental influences, and learning (most importantly during the socialization periods) are reflected in the development of adult behaviors. These factors are interrelated and severe deficits in one area cannot be completely overcome by strengths in other areas. Domestic dogs have shared a close relationship and co-evolution with their human companions¹ and there has been intense selection for the development of breeds with certain physical and behavioral types. Meanwhile, domestic cats have relatively

recent evolutionary origins and because cats have persisted in human cultures due to either their hunting abilities or, more recently, because they are valued as pets, selective breeding for behavioral or morphological characteristics has not occurred in cats to the extent it has in dogs.

Canine development

The genetic makeup and environmental effects in utero have an influence on the development of behavior even before birth. Five postnatal developmental stages have been

described in dogs: (1) the neonatal stage (birth to 13 days); (2) the transitional stage (13–19 days); (3) the socialization period (19 days until approximately 12 weeks); (4) the juvenile period (12 weeks to sexual maturity); and (5) the adult stage (from sexual maturity onwards).¹ The precise beginning and end of each phase of development vary somewhat from individual to individual but the progression from one stage to the next is consistent.

Prenatal development and in utero influences

The influence of the environment on behavior may actually come into play even before birth. While studies in dogs are limited, there are many studies in other species such as humans, rodents, and production animal species to suggest that the in utero environment is important for puppy development. Many studies in humans support the effect of prenatal stress on cognition and behavioral fearfulness in human infants.^{2,3} The importance of neurodevelopmental influences on the mental and emotional well-being of children is a subject of intensive review.^{4–6} The influence of experiential, biological, and genetic factors on the developmental variation in fearfulness and anxiety in humans during infancy and early childhood has been explored based on animal studies. In rodent studies it has been found that, if a pregnant animal is subjected to stimuli that maintain a constant state of fear, the offspring are more reactive or emotional later in life.⁷ In addition, emotional females tend to give birth to more emotional offspring. Decreased learning ability of offspring has also been associated with disturbances during the latter term of pregnancy in rats. High levels of stress during pregnancy might also lead to changes in reproductive behavior of offspring when they become adults.⁸ Similar results have been reported for guinea pigs.⁹ It is therefore likely that excessive stress on the canine mother could have deleterious effects on her offspring and so should be avoided, especially during the third trimester of pregnancy. Conversely, providing the mother with a friendly environment that affords positive social contact may facilitate desirable emotional development of her offspring.

There may also be a relationship between fetal position and the behavior of the adult animal. In rats and mice, in utero exposure of females to androgens leads to increased urine marking and mounting, and decreased reproductive success on reaching adulthood, while males located between two females may be less aggressive on reaching adulthood.¹⁰ This effect may be due to the secretion of androgens on adjacent fetuses, or from the androgens transported in the blood flow from a male fetus caudal to the female in the same horn. A similar effect may be seen in dogs, since prenatal exposure of the fetus to testosterone has been shown to prime the central nervous system (organizational effect), so that male behaviors such as leg lifting begin to emerge with maturation, independent of testosterone levels at the time of onset of the behavior.¹⁰

Neonatal stage

During the neonatal period, the puppy spends most of its time nursing or sleeping. Puppies have limited motor ability and, up until about 5 days, movement is on the belly by paddling and stroking with the limbs. By 6–10 days, the

forelimbs are capable of supporting weight and by 11–15 days the hind limbs can support weight and walking begins.¹¹ The rooting reflex is present from birth and begins to wane after about 14 days.¹² A slow and sustained pain response to toe pinch is present from birth, but withdrawal and escape from pain do not develop until early in the transition period.¹³ Eyes and ear canals are closed at birth and open by 10–14 days, by which time the palpebral reflex to touch and light and the pupillary responses have already developed.¹² Being unable to hear or see, neonatal puppies are effectively shielded from most psychological effects of the environment. Defecation and urination are reflexes that are elicited by the mother's licking and cleaning of the perineal region.¹² Temperature regulation is poor at birth and puppies huddle together. They exhibit intense distress and vocalize if they become cold.¹⁴

An important consideration during development is the effect of handling and strong stimuli on the behavioral and physical development of the puppy. One study showed that puppies that have been exposed to short periods of handling from birth to 5 weeks of age were more confident and exploratory than controls.¹³ Handled puppies had increased nervous system maturation, more rapid hair growth and weight gain, earlier opening of the eyes, and enhanced motor development. Thus, early handling may lead to improved learning ability and a more emotionally stable puppy. Similar results were found in a study of kennel-raised and home-raised dogs, with the interesting difference that handled, kennel-raised puppies were better able to handle the stress of isolation.¹⁵ It has been suggested that mild stressors such as early handling affect the pituitary-adrenocortical system in a way that helps the puppy cope better with stress later in life. See also role of mother, [Chapter 4](#).

Transitional period

Toward the end of the second week, the pup enters the transitional stage of its neurological and behavioral development. During this period, the puppy changes from a condition of complete dependence upon its mother to one of increasing independence. The transitional period begins with the opening of the eyes and ears. The auditory evoked startle response usually emerges by 18 days and the puppy may begin to localize sound.¹⁶ The brainstem auditory evoked response also attains the characteristics of the adult at this time.¹⁷ The electroretinogram has the basic features of the adult pattern by 15 days and is fully developed by 28 days.¹⁸ Visual and auditory orientation develops around 25 days.¹³

During the transitional period, the puppy begins to walk rather than crawl, both forward and backward. Puppies begin to exhibit voluntary control of elimination, but the mother still continues to clean their excreta.¹⁹ By the end of the transition period, the puppy begins to interact with other individuals and many of the patterns of adult social behavior appear. Play mouthing by puppies begins to develop and by 4 weeks of age, nipping can be quite painful.¹⁹

Gently exposing the pups to all types of stimuli for short periods each day during this period is likely to enhance physical and mental development. A simple exercise involves allowing pups to crawl or walk on surfaces with differing textures and temperatures. Objects of varying shapes can be

moved in front of them in order to promote visual acuity and motor skills. Providing a variety of noise stimuli at low decibels and varied frequencies may facilitate auditory development. Whistles, rattles, music, recordings of environmental noises, and the human voice can be used to provide a variety of auditory stimulation.

Socialization period

The onset and early stages of the socialization period are closely associated with the maturation and myelination of the spinal cord. All sensory systems are functional during this period and learning capacity increases. Although the puppy can support itself and becomes more mobile during the transitional period, normal sitting and standing develop by about 28 days.¹⁹ Teeth erupt and the pups begin taking solid food for the first time. A puppy's performance in classical and operant conditioning exercises reaches adult levels at about 4–5 weeks, but vision and brainwave function do not reach adult levels until about 8 weeks.¹³ By 4 weeks of age, puppies tend to sleep in groups and at 6 weeks, they start to sleep alone. Weaning begins around 4–6 weeks of age. At first, the puppy begins to show an interest in food, and the mother will begin to decrease nursing contact and may regurgitate food for her young.¹⁹ This is a good time to begin offering appropriate food to puppies. Most puppies are weaned and eating solid foods by about 60 days of age. By 8–9 weeks of age, puppies are attracted by the odors of urine and feces to specific areas for elimination and begin to avoid soiling their den (sleeping quarters).¹⁹

This period is one of rapid development of social behavior patterns.²⁰ At the beginning of this period, the puppy begins to respond to the sight or sound of persons or other animals at a distance. The behavior of puppies during the early socialization period is characterized by a willingness to approach novel objects and, in particular, moving stimuli. Investigative behavior becomes apparent and puppies begin exploring away from the nest area. Social following and early signs of affiliative behavior emerge. During this time, there is a marked increase in interaction with littermates, the mother, and the environment. Distance decreasing and increasing social signaling begin to appear. Gradually, as the mother spends less time with the puppies, the interaction and relationship between littermates strengthen.²⁰

The socialization period is an important time for puppy development. The puppy's experiences and social familiarity during this period establish the general pattern that will affect almost every social or situational response in later life. By the end of this period, the puppy has formed patterns of response to the situations to which it has been exposed – for well-socialized pups, this should include most things they are likely to encounter later in life.²¹ During the socialization period, the puppy develops attachments to its own and to other species that it encounters socially. It is also a time when the puppy begins to become familiar with and make attachments to places (localization or site attachment), and adapts to many of the stimuli to which it has been exposed (habituation). Because this is the time when social relationships are established, it is essential that puppies have contact with a wide variety of future social partners (people and animals). Neither reward nor punishment needs be involved, although excessive stimuli, whether

positive or negative, before 7 weeks of age appear to increase attachments.²²

Besides being a time for the development of social relationships, this also appears to be a period of sensitivity to psychological stress. The sensitivity necessary to facilitate the formation of social relationships also seems to make the puppy vulnerable to psychological trauma. Fear postures begin to emerge at about 8 weeks of age,²⁰ and by 12 weeks sociability begins to decrease and the undersocialized puppy may become increasingly fearful of novel situations and people.¹⁶ Startle reactions to sound and sudden movement become much more pronounced. With time, the puppies learn to discriminate between stimuli associated with dangerous situations and those that are insignificant. Frequent gentle handling has been found to be important for kittens in order to decrease the fear response shown to humans, and the same is probably true for puppies.²³

During the socialization period, social play and exploration become increasingly important.¹³ Play between puppies not only aids in physical development but also provides practice in the development of appropriate adult behaviors, including communication, predation, and sexual relationships. Pups that have the opportunity to interact with other dogs also learn from them by observation. Although solitary play does occur, most play is social, with biting, barking, chasing, pouncing, and mounting being the most frequent components.

It appears that extreme behavior can develop in pups during this period. In a pilot study, puppies were observed during their routine veterinary visit. Each puppy was observed while free in the room, during the physical exam and after the examination, and the preliminary findings suggest there was a set of extreme behaviors displayed by 10% of the puppies in this study. These “extreme” puppies displayed active avoidance, flattened ear position, excessive motor activity, less exploration, lip licking, panting, and extremes of locomotion (increased activity or prolonged inactivity).²⁴

Juvenile period/adulthood

The juvenile period extends from the end of the socialization period to sexual maturity. By 12 weeks, basic learning capacities appear to be fully developed. While object and environmental exploration increase during this period, it is also a time of increasing avoidance, so few, if any, new social contacts are likely to develop. The speed of learning begins to slow by about 4 months, perhaps because previous learning begins to interfere with new learning.¹² By 4–6 months, males begin to show greater attraction to females showing signs of estrus.¹⁹ The final period, adulthood, begins at puberty, which is around 7 months or older in males and 6 months or older in females. Dogs are generally considered to be socially mature at about 18 months of age and fully mature by about 2 years.¹⁹

Canine social behavior and communication

Social behavior comprises all interactions among members of the same species. In order to understand the biology of a domestic species one should be familiar with both the

behavior of the wild ancestor and the modifications derived from the domestication process.

It is obvious that the study of wolf behavior can give us some insights on the nature of many aspects of dogs' social behavior and communication. For instance, dogs and wolves communicate using similar methods of olfactory, vocal, tactile, and visual signals. However, after more than 15 000 years of domestication, selective breeding has introduced many differences in structure and behavior. For example, the repertoire of vocal signals is much more extensive in dogs and may have evolved as a means of intraspecific communication amongst dogs, and between dogs and humans.²⁵ Regarding communication, dogs seem to be able to react to human visual cues in a different manner than wolves.²⁶ Dogs and wolves also vary in their affiliative behavior with people. From a very young age, dogs seek human eye contact – something not seen in wolves, even hand-raised ones.²⁵ Thus, any comparison between wolves and dogs should be made with care.

The wolf as a model to understand the behavior of the dog

Wolves are group-living social hunters who work cooperatively to prey on animals larger than themselves. The understanding of wolf biology and behavior comes from two different sources of information, which often lead to contradictory results: wild packs and captive packs. Classical studies on wolf behavior were done in captive packs where aggression seems to be more frequent and intense than in the wild. More recent research revealed that wolf packs are better described as a family unit consisting of the breeding pair and offspring from successive breeding seasons.²⁷ Experts on wolf behavior currently describe the role of the wolf leaders as parents – guiding, teaching, and caring for their pack members. A parent–family model better describes wolf–wolf relationships than a competitive hierarchy model, which is more typical of captive packs.²⁸ Most social interactions within the pack are affiliative and social conflict is usually resolved through ritualized displays or by dispersion of one or more pack members. Overt aggression is very infrequent between group members in wild wolf packs.

With canine domestication, elements of lupine body language have been lost and there is retention of juvenile characteristics.²⁹ Further complicating matters is the wide diversity in physical and behavioral traits between breeds which may compromise an individual dog's ability to communicate. In fact, with insufficient socialization with a variety of breeds, some conflicts between dogs may be due to a "failure to communicate" (miscommunication). Studies of both urban and suburban feral dogs have also demonstrated that they do not form packs, nor do they breed cooperatively.^{30,31} Studies evaluating this concept have concluded that the theory that canine social groups are organized by a dominance hierarchy "is a human projection that needs replacing."³²

Canine social groups

Dogs form social groups with rules for interaction based on deference, with individuals giving way to each other based on their history of interaction (previous experience) and

individual motivations. For example, a young dog, using aggressive displays, may keep a bone from an older larger dog if the younger dog is sufficiently hungry to risk the fight (resource-holding potential). In fact, dog–dog interactions have been characterized by a combination of resource-holding potential and learning, and not as a result of some form of dominance hierarchy.³³ Genetics, socialization, age, availability of resources, and problem-solving skills (and perhaps which dog was first in the home) might also play a role as to which pet defers in a situation of resource competition. On the other hand, it is not uncommon to find social asymmetries between dogs living together in a household, where one dog is more competent in controlling resources and social interactions. Owners that try to equalize these asymmetries can therefore alter what otherwise might be a healthy social relationship between dogs.

Regardless of the current understanding on wolf social behavior, the many studies showing differences between wolves and dogs, and the lack of any data to support a pack social structure in dogs, the concept of a hierarchical relationship between dogs in a household and dogs and humans continues to be perpetuated.²⁷ Furthermore, training techniques based on dominating the dog through direct confrontation are still favored by some professionals, based on outdated models to explain wolf behavior.

Dogs communicate with each other using body postures, facial expressions, physical interactions, and vocalization as appeasement to avoid confrontations. Therefore, when humans use physical techniques (e.g., pinning, alpha rolls, grabbing the collar) or verbal corrections, this is not the visual, odor, pheromone, and vocal "language" with which dogs communicate. Instead the dog reacts to the person's actions and emotional state.³⁴ Genetics and temperament, previous experience, the dog's emotional state, and the level of perceived threat influence how it responds. It should not be surprising therefore that studies have demonstrated that positive training, consistency, and rule structure led to significantly higher levels of obedience, fewer behavior problems, and lower levels of aggression and avoidance behaviors, while punishment led to significantly higher training problems, lower obedience scores, and an increase in avoidance behaviors and aggression toward unfamiliar people and dogs.^{35–37} Confrontational techniques, such as hitting, growling, alpha rolls, or even yelling "no," do nothing to encourage desirable behavior and, in fact, can lead to aggression, especially in dogs that are already aggressive to people.³⁸ Relationships with dogs should not be based on some ill-conceived concept of trying to achieve a dominant status. Instead, they focus on effectively communicating what you want the dog to learn by consistently and predictably rewarding those behaviors that are desirable while ignoring or preventing those that are undesirable. See the avsabonline.org guidelines on dominance for more details.

Canine senses

Vision

Dogs and wolves have a visual system that has been shaped by different evolutionary pressures than those of the human system. Dogs inherited a visual system specialized to hunt at

dusk and dawn. They see very well in low levels of light due to the presence of a tapetum behind their retinæ which reflects light back to the retinæ. They are very sensitive to movement within their visual field. However, dogs are less able to distinguish fine details and have a more limited color perception. Dog vision is dichromatic, so dogs can distinguish some pairs of colors, like blue from yellow, but not others, like green from red.³⁹ These characteristics make the dog better able to hunt small, fast-moving animals that are active in dim light.⁴⁰

Hearing

In terms of the frequency of sound, dogs are able to hear a wider range of sounds compared to humans. The exact range of canine hearing is not clear due to differing results from early studies.⁴¹ However, the best estimate seems to be from 15 000 to 60 000 Hz. They are able to maximize sound capture and localize sounds by moving their pinnae and tilting their heads.⁴²

Olfaction

Dogs have an extremely sensitive sense of smell, which appears to be their primary sense – dogs have been shown to use this over their visual senses when light is adequate as well as when it is poor.⁴³ Dogs have helped, and continue to help, humans in a variety of activities, many of them directly related to their outstanding olfactory perception, from hunting to drug and explosives detection. Over the last few years research has been focused on the potential value of specially trained dogs in the detection of some human diseases, particularly cancer.

Taste

Dogs have taste buds, similar to people, but there are fewer of them, and there are differences in types and distribution. In people, the main types of taste discrimination include sweet, salty, sour, and bitter. Dogs probably do not have a craving for salty foods, based on their taste bud patterns. They can certainly detect bitter tastes, but those taste buds are mainly distributed at the back of the tongue, so a quick lick or gulping could entirely bypass those taste receptors. Dogs also have receptors for meats, fats, and meat-related chemicals, as well as having receptors on the tip of the tongue for water.

Touch

Dogs have sensory nerves across their body surface, just as people do, and touch is as important to dogs as it is to humans. In fact touch may be one of the first senses developed in dogs, and dams start nuzzling and licking puppies soon after birth. Canines have many specialized touch receptors, including vibrissae on the face that can sense air flow. Most dogs enjoy being petted, an endeavor that often brings nearly as much pleasure to their owners.

Canine communication

Social behavior needs the constant exchange of information between individuals. Communication is the transfer of

information from one individual to another when an individual (emitter) sends a signal that may modify another individual's behavior (receptor). Signals carry information that the individual wants to convey as well as information about the internal state of the signaler.²⁵

Dogs use auditory, visual, olfactory, and tactile signals to communicate with members of their social group and others. In order to understand a communication event, three elements must be considered: (1) the communication signals emitted by the dog; (2) the context in which they occur; and (3) the social relationship between the emitter and the receptor. For body posture and facial expression resources see [Appendix B](#).

Auditory communication

Dogs can produce a wide range of vocalizations. Nevertheless, from a practical perspective, there are four that deserve some mention.

Howling

Howling in wolves is thought to be intended as a means of maintaining group cohesion, coordination of pack activities, and as a form of long-distance communication to reunite the pack. Nevertheless, in wolves, the full potential function of howling remains unknown.⁴⁴ Howling in dogs may have similar functions, particularly when a dog is separated from its social group. Many dogs howl in response to medium- to high-frequency sounds, including ambulance sirens and some music instruments, such as violins. That is considered a normal pattern of behavior with no clinical relevance.

Whining/whimpering

These vocalizations are usually related to care-seeking behavior or distress. The behavior could be further shaped by instrumental learning. For example, owners who respond to the vocalizations with attention or any other form of reward would reinforce the behavior.

Growling

Dogs use growls to communicate a threat. Growls are also heard during play.

Barking

Barking is a puppy-like behavior in wolves, which is rare in adult wolves except perhaps in situations of conflict and as a warning. In dogs barking is a well-developed vocalization present in a wide range of contexts, including excitement, play, attention seeking, or just whenever the dog wants to raise awareness of a change in the environment.

Understanding communication requires the combined use of multiple signals, including multiple forms of vocalization and visual communication. Barks and growls may be classified by tone (throaty or low, middle-toned, and shrill or high) or by intensity (high, medium, and low). For instance, a bark may be throaty with a high intensity, to show that the dog is determined to fight and defend itself. Growls may be deep, throaty, and sustained as a warning of a possible defense. This is usually accompanied by other signs such as raising the hackles and snarling.

Visual communication

Body postures, movements, and facial gestures enable information to be passed quickly between the emitter and the receptor of the signals. Visual communication is useful when dogs are in close proximity but both emitter and receptor must be present. It usually produces a fast response.

When analyzing a dog's postures and gestures, the most relevant features are considered to be the following: general body posture, and tail and ear position; the gaze and the size of pupils; the lips; movement; and general attitude. All of these must be considered in concert, depending on the context and sequence of their appearance; usually they must be read together since the dog seldom uses an independent signal to communicate. Between group members potential fights are generally resolved by displaying ritual signals and only when there are communication problems do conflicts escalate into aggression.

Ears

- up/forward = alertness/confidence
- down/back = fear/appeasement.

Before an attack, all dogs, even those which are aggressive, lay their ears back to protect them from possible damage.

Tail

A wagging tail indicates arousal, which could be linked to different underlying motivational states, from play to aggression. The height of the tail and speed and direction of the wagging can give clues as to the intent of the dog.⁴⁵ For example, broad sweeping sideways movements with a relaxed body posture can be taken as a friendly gesture.

- up = alertness/arousal
- middle = relaxation/attention
- down = fear/appeasement.

Head

- up = alertness/confidence
- down = fear/appeasement.

Lips

- Raising of the lips with the corner of the mouth pulled forward can indicate offensive aggression or threat.
- Pulling the corner of the mouth backwards, exposing the teeth, may indicate a defensive aggression or threat.
- Pulling the corners of the mouth back, without exposing the teeth, can indicate an appeasement gesture.
- A relaxed mouth, slightly opened, with the tongue hanging out, can indicate peaceful intentions.
- Yawning or licking of the lips may indicate appeasement to disarm a threat but is often an indication of motivational conflict.
- Licking – in the wild during the weaning process adult animals regurgitate partially digested food for the pups and pups lick the mouth of the adult animals to request this. Licking can be the expression of an



Figure 2.1 Conflict. Licking may be a sign of conflict which very often passes unnoticed for both owners and professionals. (Courtesy of Gary Landsberg.)



Figure 2.2 Canine play. Note play and appeasing posture of dog on right.

underlying motivational conflict and it is often observed in contexts of social anxiety and fear (Figure 2.1).

- When directed to other individuals, licking remains in adults as a signal of appeasement. Licking the face of a person or a dog may be used as a request for food or attention.

Body posture

- Standing tall and/or leaning forward can indicate alertness or confidence.
- Crouching can indicate fear or appeasement.
- Lying laterally can indicate appeasement.
- Rolling over onto the back can indicate appeasement.
- Mounting can indicate high arousal, with the exception of an intact male mounting a female in estrus. Mounting may be displayed by females as well as males.
- Standing over, crouching, lying laterally, rolling over, and mounting may also be displayed by dogs during play (Figure 2.2).

- Directing the body, head, or gaze towards another individual can indicate challenge or interest.
- Turning away the body, head, or gaze from another individual can indicate appeasement.

Gaze

- Direct visual contact can indicate an overtly threatening attitude.
- Avoiding visual contact can indicate fear or appeasement.
- Blinking can be used to reduce the level of confrontation.

Olfactory communication

Olfactory signals contain information about many aspects of the dog's physical, physiological, and behavioral characteristics, including individual identity, sex, breeding condition, age, social status, and even emotional state. Consequently, chemical communication plays a fundamental role in virtually all aspects of canine social, maternal, and reproductive behavior. Dogs show specific behavior patterns related to odor communication, including tonguing and the raised-leg urination posture. Olfactory cues are found in all body secretions, from sebaceous and apocrine skin glands to saliva, urine, and vaginal discharge. Each dog seems to have an individual odor, which results from a variety of internal and environmental influences, from genetics to the effects of diet and microflora. Beyond individual recognition, dogs release to the environment certain chemicals that possess a specific regulatory effect on the physiology and behavior of their conspecifics. Chemical signals in mammals need to be understood as modulators that exert their effect in conjunction with other elements of control, including social context and learning processes.

Touch

Touch is important for the development of attachment within groups of social animals. Physical contact while resting has been observed in dogs even in hot weather, so it is believed that it has a social function and is not just used to get or conserve warmth. Physical contact can also be solicited or accepted in canine interaction with humans and proximity, including physical contact, has been identified as a bonding behavior.²⁵

Metacommunication

Metacommunication refers to a signal or a combination of signals which affect the way the subsequent behavior is understood. The best example of metacommunication in dogs is the play-soliciting posture or play bow. Whenever this posture is presented it indicates not only the desire to play, but also that all subsequent signals should be interpreted in the context of play (see [Figure 20.3](#)).

Interpreting canine communication signals

Canine behavior is complex and it is easy to focus on just one aspect of the signals being transmitted. This explains

common beliefs such as “barking dogs don’t bite” and “a wagging tail means a friendly dog.” A series of chained signals can together form a signal of the behavior that will follow. It is necessary to read the communication signals all together and avoid interpreting single signals that may lead us to communication failures.

Signals of alertness or attention

- Ears forward
- Tail down but not between the legs
- Focusing on the person or object for longer than usual.

Signals of offensive aggression

- Ears erect and forward
- Tail high (it may be moving)
- Direct and sustained visual contact
- Piloerection
- Body erect and inclined forward
- Hair erect in the back of the neck
- Standing over the individual or putting a paw over the individual
- Snarling and retracting the lips upwards
- The observation of growling or teeth-baring would indicate increasing levels of aggression
- A confident animal usually shows more self-assurance and has priority access to the more valuable resources – it is not necessarily the more aggressive one in a confrontation. For example, aggression may be used to acquire and maintain access to resources but may also be used as a way to obtain more information about the intentions of other individuals during interactions.

Signals of fear/appeasement

- Ears down or backwards
- Dog doesn’t resist being mounted
- Tail down, between the legs or held close or tucked under the body
- Lowered body posture
- Rolling over on the back
- Urinating
- Licking
- Avoiding visual contact (averting gaze)
- Retracting the corner of the lips backwards.

If the dog shows these signals while trying to approach the other individual, the most likely interpretation is a friendly approach. Nevertheless, if the animal is trying to increase the distance from the person or the other dog, a fearful underlying state should be considered ([Figure 2.3](#)).

The behavior sequence

Every behavior has a sequence that may be subdivided into phases. These are the initiation (starting an action), followed by a pause (giving time to answer), then taking an action (responding to the other individual’s response). A sequence may include an appeasing phase (stopping the action or doing something else) and finally a refractory phase before a new sequence is started.



Figure 2.3 Fear/avoidance posture in a dog. (Courtesy of Gary Landsberg.)

It is possible that certain modifications of the behavior sequence could be a sign of abnormal or altered behavior. Different communication components, together with the context in which they occur, may be evaluated to determine if an action is normal or pathological. The sequence of actions, the context in which they occur, and the frequency and intensity of the behavior are all important in determining if a behavior is normal. For instance, a dog that bites without warning or a previous interaction usually presents an altered behavior sequence. The aggression may be a signal of illness if some of the steps or phases of the sequence are omitted or altered.

Human–dog communication

Since each species has its own normal or innate means of communication, the signals sent by the dog to the human are the same as the ones used to communicate with other dogs. However, through co-evolution, selective breeding, and years of domestication, some dog communication such as barking appears to have evolved to communicate better with humans.

The dog learns in its coexistence with humans to consider them as members of its social group. In fact, dogs may have developed the ability to use human social cues to predict human behaviors, to fit into the human social system more successfully.⁴⁶ Thus, they readily learn the signals that mean humans are interested in them.³⁴ The visual world of humans is particularly important to dogs – they look where humans look. If humans are blindfolded, dogs have trouble taking cues from them.²⁵ As long as humans are able to interpret canine language, they will be able to understand the dog's intentions, their moods, and also may influence their behavior in a way that makes sense to the dog. Humans are basically a visual species, which is why language based on visual signals is easier for us to understand. It is important to remember that dogs live in a world of smells and sounds. Thus their behavior may be in response to signals undetectable by humans.

Dogs are remarkably adaptable. When dogs are adopted by a human family, they learn to interpret the body postures,

actions, words, and wishes of their owners and seem to have evolved to be able to better do so.³⁴ Nevertheless, dog owners need to understand canine behavior, canine communication, and basic learning principles if they want to be able to shape and train desirable behavior successfully. A lack of understanding of what the owners are trying to communicate, inconsistencies in how the owners respond, inconsistencies in training, and the use of punishment can lead to conflict, increasing anxiety, and uncertainty in the dog. Rewards should be used to teach puppies the desired response to commands, to accept and enjoy handling, to give up resources such as food or toys on cue, and to defer to the owners. The family should be consistent in giving anything of value in the dog's eyes, including food, play, and attention so that the dog learns what behaviors get rewards. Catch phrases, such as learn to earn, nothing in life is free, who's training who, structured interactions, and say please, help owners to be better aware of when rewards should and should not be given.

Dogs are very good at some kinds of learning. They are quick to learn from human responses what can be expected in future encounters, provided humans are predictable and consistent. However, this can be a particular problem with children, who may be less able to read the dog's body language and signals and may be less consistent in their responses. In fact, if a puppy learns that its actions (e.g., nipping or biting), postures, or vocalization are successful at getting attention, play, toys or food, then it may learn to use aggression to achieve its goals. This is further aggravated by owners who are frustrated and turn to punishment or confrontation to try and suppress behavior. This can be one way in which conflict-induced aggression could arise.

Contrary to popular belief, where the dog sleeps and when the dog eats are unlikely to have any impact on the development of aggressive behavior with family members.

Feline development

Kittens go through the same developmental stages as puppies, although the periods may be shorter and less easily defined.⁴⁷ The timetable for development can be variable between individuals based not only on genetic factors but also on maternal factors, environmental factors such as handling and housing, and sexual differences. The neonatal period is a time primarily of nursing and sleep, in which the kitten is fully dependent on its mother. The transitional period, where locomotion and sensory development emerge, begins in the second week, and the socialization period begins in the third week and extends to 7–9 weeks of age. The juvenile stage ends between about 6 and 12 months of age at sexual maturity,²³ although social maturity is not reached until 2½ years of age.⁴⁷

Prenatal development and in utero influences

Kittens are generally born after a 63-day gestation. The condition of the queen during pregnancy plays an important role in the development of the kittens. When queens are fed restricted rations or low-protein diets during late gestation and lactation, their kittens have brain development deficits,

developmental delays, and reduced social attachment compared to kittens from queens on adequate diets.^{48,49} Tactile sensitivity is present in the embryo by day 24 of prenatal life and the vestibular righting reflex has developed by about day 54 of gestation.⁶

Neonatal and transitional period

During the neonatal period, the kitten is predominantly guided by tactile, thermal, and olfactory stimuli. Although the kitten is born with its eyes closed and is unable to hear, tactile sensitivity and the vestibular righting reflex develop prenatally.⁵⁰ Olfaction is present at birth and is fully mature by 3 weeks.⁵¹ Hearing is present by the fifth day and the kitten begins to orient to sounds by the seventh day.⁵² Adult-like orienting is present by a month of age. Although the eyes open at around 7–10 days, visual orienting and following don't develop until the third week, and visual orienting and obstacle avoidance are not developed until 4–5 weeks of age. Full visual acuity may not be achieved until 3–4 months of age. Self-grooming in the form of oral grooming and paw grooming begin to emerge in the second to third week of life.

At birth, kittens move toward warmth but cannot regulate their body temperature until around 3 weeks of age; full adult temperature regulation may not be achieved until 7 weeks of age. During the first 2 weeks of life, the kittens are fairly immobile, and walking doesn't begin until around 3 weeks of age. Body righting, although present at birth, is not well developed until 1 month.

Good maternal behavior is essential for healthy kitten development. Kittens that are separated from their mother and hand-raised from 2 weeks of age are more fearful of kittens and people, more sensitive to novel stimuli, and slower to learn.^{53,54} Hand-raised kittens may still develop social attachments to other kittens, but this occurs much more slowly.⁵⁵ Kittens from undernourished mothers can have growth deficits in some brain regions (cerebrum, cerebellum, brainstem), as well as delays in the development of crawling, suckling, eye opening, walking, play, exploration, climbing, and predation. These kittens may also show decreased learning ability, antisocial behavior toward other cats, and increased fear and aggression. Many of these changes don't arise until much later in the cat's development. Maternal malnutrition, from a low-protein diet, can also lead to abnormalities in behavior and motor development.⁴⁸

The effects of early handling on kittens

Early handling of kittens by humans is not only beneficial for improving social relationships between kittens and humans, but also leads to accelerated physical and central nervous system development. Kittens that are held and lightly stroked daily for the first few weeks of life open their eyes earlier, begin to explore earlier, and are less fearful of humans.⁵⁶ Kittens that are handled for 5 minutes daily from birth to 45 days are less fearful than nonhandled kittens. They approach strange toys and people more frequently and are slower to learn avoidance.⁵⁷ In a study in which 5½–9½-week-old kittens were handled by 0, 1, and 5 people, the 5-person kittens exhibited the least fear of strangers.⁵⁸ In another

study, kittens that were handled between 3 and 14 weeks of age would accept holding for longer and would approach humans faster than kittens that had received no handling and those that were handled between 7 and 14 weeks of age.⁵⁹ These studies indicate that the most receptive time for socializing kittens to people is up to 7 weeks of age, and that the more opportunities the kitten has for pleasant human handling, the friendlier the kitten is likely to be toward people.⁶⁰

There may be a limit to the duration and intensity of handling which is optimal for development of bonds with people. Several studies have assessed kittens which were handled from 1 minute to over 5 hours, with 30–40 minutes per day generally yielding an adequately socialized kitten.^{60,61} Unpublished work by J. Bradshaw and S. Cook suggests that handling for more than an hour a day does not result in further enhancement of socialization. Kittens may be more outgoing and confident when socialized with their littermates.⁶² Establishment of a relationship with a cat may be enhanced by the act of the provision of food.⁶³ The kittens may be influenced by the presence and activities of the queen when socialization is attempted, and if the queen is reserved, shy, or fearful, this behavior may be learned by the kittens. Cats may learn to expect pleasant or unpleasant interactions from either familiar or unfamiliar people. Turner⁶⁴ proposed that a confident social cat needs a few positive experiences with a new person to show positive social interactions whereas a fearful, undersocialized cat may require many positive experiences without an unpleasant experience to learn to trust a new individual.⁶⁵

Though further study is indicated, based on a review of the available studies the optimally socialized cat is one sired by an outgoing, confident father and raised by a mother who is at the very least not overly fearful of humans. Ideally, the kittens should have pleasant, positive interactions with a few familiar people for 30–60 minutes a day. The people to whom a kitten is introduced should be consistently pleasant and predictable in their interactions and avoid traumatic experiences. See also role of mother, [Chapter 4](#).

Socialization period

By 4 weeks of age, hearing, vision, temperature regulation, and mobility are sufficient for the kitten to begin moving away from the nest and developing social relationships with people and other animals in its environment. At this age, learning can be accomplished solely by visual cues. Body-righting ability is fully mature by about 6 weeks of age. Running begins in the fifth week and most adult locomotion is developed by 7 weeks of age.⁵⁰ Complex motor abilities may not be fully developed until 10 weeks or older.

During the first 3 weeks, the mother initiates nursing, and teeth begin to erupt at about 2 weeks of age. At 4 weeks, the kittens begin to eat some solid foods and weaning begins. From this point onward, the kitten initiates most bouts of nursing. At 4–5 weeks of age in a free-living environment, the mother may begin to bring prey to the kitten.⁶⁶ Deciduous dentition is fully developed by 5 weeks of age and kittens may start to kill mice at this time. Kittens generally share their mother's food choices, and this is most marked by 7–8 weeks of age. Similarly, the choice of prey is usually similar to that of the mother.⁶⁶ By 5–6 weeks of age, the kitten has

full voluntary control of elimination, and digging and covering in loose soil may begin. By 7 weeks of age, most kittens are weaned, although suckling may continue intermittently for several more weeks. Defensive reactions to large prey and fearful reactions to threatening stimuli may begin to be displayed by 6 weeks of age.⁶⁷

Within the socialization period, social attachments are formed most easily and rapidly. Social play begins at this time, before the interest in object play. Attachments can be formed at other times, but the process is much slower and involves extensive exposure. Socializing kittens to other species, including humans, may begin as early as 2 weeks of age and may only extend to 7 weeks of age. Because of genetic differences between individuals, and other factors such as early handling, maternal effects, and the cat's environment and experiences, kittens and adult cats can show a great variability in their friendliness toward people and other cats, regardless of the amount of early socialization.⁶⁸ Studies on cat personality types have identified at least two personality types: sociable, confident, and easy-going and timid, nervous, and aggressive.⁶⁹ Factors that might influence these personality types include paternal genetics, early socialization, maternal genetics, and social or observational effects of mother and littermates.⁷⁰

Play and predatory behavior

Playful social interactions with siblings and mother begin at around 4 weeks and are generally well developed by 7 weeks of age. Social play includes wrestling, rolling, and biting of conspecifics and may be directed at the human hand (or other moving body part). Predatory-type behaviors may become a part of social play in the third month and agonistic social behavior also begins to emerge. Play between older kittens may become more serious and intense over time. Play, exploration of inanimate objects, and locomotor play begin to escalate at around 7–8 weeks of age and peak at around 18 weeks of age, before beginning to decline. Social play, on the other hand, may continue at a fairly high level until 12–14 weeks of age, before it begins to decline.⁷¹ Object play may be social or solitary and may consist of pawing, stalking, and biting of objects. This type of play also simulates a variety of aspects of the predatory sequence. Owners should provide an opportunity for their kittens to engage in object play by offering a variety of prey-like toys for their cats to attack and catch. Kittens that are weaned at an earlier age show earlier development of object play.⁷²

Predatory behavior may be affected by social or observational learning, age of weaning, early socialization, maternal behavior, observation of other cats, genetics, and possibly by competition with littermates. A kitten's mother will gradually introduce it to prey so maternal effects can be an important factor in prey preferences and hunting ability.⁷³ At first, dead prey is brought to the kitten, progressing to live prey which the mother releases for it. If the kitten loses control or pauses too long the mother may intervene so the kitten's skills become more finely tuned through observation and interaction.⁶⁶ Lack of familiarity with a species, or socialization to that species, may inhibit predation on that species. Despite a lack of familiarity with prey, and even in the absence of maternal experience and learning, many cats still develop into competent hunters. Early-weaned kittens

develop predatory behavior earlier and show an earlier increase in object play while normally weaned kittens are less likely to become predators and have a later onset of object play.⁷⁴ Hunger has been shown to increase the incidence of killing prey, while increasing prey size reduces the probability of killing. Similarly, studies of object play found that hunger increases the motivation to play and reduces fear of larger toys.⁷⁵

Juvenile period/adulthood

The juvenile phase continues until sexual maturity, at which time the cat may become increasingly independent. Age of sexual maturity depends in females on genetics, breed, and the environment. Sexual maturity is usually observed at 5–9 months of age, although the first heat cycle may occur as early as 4 months in some cats. Although male kittens may be mature enough for spermatogenesis by about 5 months of age, mating and sexual maturity are usually not observed until around 9–12 months of age.

Social behavior and communication in cats

The domestic cat (*Felis catus*) is a small, crepuscular (most active during dawn and dusk), solitary hunter of the felid family. Molecular, archeological, and behavioral evidence suggests the domestic cat was derived from *F. silvestris libyca*, the African wildcat.⁷⁶ There are genetic and morphological similarities to *F. silvestris* (the European wildcat) but behavioral evidence suggests *F. silvestris* is not likely to accept human contact, as displayed by severe fierceness and extreme shyness even under ideal handling and rearing of first-generation hybrid offspring.⁷⁶

The cat evolved in arid areas and hunts small animals such as rodents, frogs, birds, and reptiles. Among felines, cats are small, tending to weigh between 2 and 8 kg, and have large, forward-facing eyes, large, mobile ears, and sensitive vibrissae on their face that aid in detecting prey in dim light. They have large, laterally flattened canine teeth and sharp retractable claws on front toes to catch, hold, and kill prey. The cat is an ambush hunter. It locates prey using its sensitive hearing, vision, and sense of smell. It then stalks silently until it is close enough for a sudden rush and grab. Domestic cats do not possess the stamina to chase prey for long periods. They are able to climb and to jump up to five times their own height. Being small, they are potentially prey for other larger animals, so being agile gives the cat an advantage not only when hunting but also in escaping when being hunted.

Social organization and density

Of all the domestic species, cats are unique in western countries as there is a flow of individuals between three distinct populations: owned cats, semiowned cats, and feral cats. Cats are readily able to move between being a companion animal with food and water provided to an animal that scavenges food, to an animal that survives solely by hunting.

The normal social organization of cats is variable, which helps them to adapt to different ecological conditions. Rather than being easily described by one social system, they

are highly variable as to how they can live and organize themselves socially.⁷⁷ Cats can be found from living as solitary animals, intolerant of other cats, to as members of large colonies.

Cats are solitary hunters as their prey consists of small animals that are best caught by a single animal, but it is generally accepted that cats are a social species that form complex social groups.⁷⁸ Cats can live in a variety of social group structures. These include being solitary unless mating or raising young to stable social groups. The composition of the groups varies with the distribution and abundance of food, gender, and the social nature of the individual. Where food is abundant, cats will gather together and form structured groups.

A population of cats within an area can be considered a colony.⁷⁸ Within a colony, the cats will form affiliative and antagonistic relationships. Affiliated cats are identified by their greeting each other, rubbing heads and bodies, and sometimes entwining their tails. They may also groom each other.⁷⁸ It is thought that this helps create a group odor that identifies all members. Long-term associates and related individuals will be generally found together, may share sleeping spaces, and share food.^{79,80} Antagonistic encounters are rare in a stable colony. Cats that do not get along tend to avoid each other and use time-sharing to access common areas.⁸⁰ With the group, dominant – subordinate relationships (social asymmetry) may be established as a means of resolving conflicts without aggression.⁷⁸

Queens will generally form groups with their kittens. Queens may raise their kittens with other queens. Natural colonies are matrilineal comprising females and successive generations of young.^{78,81} Neutered males behave more like females while relationships with males may vary from solitary to affiliative.

For intact male cats, spending time with queens is important to their developing familiarity with them so there is a chance the queen will mate with the male when next in estrus. However, spending too much time with one group of queens reduces the time available to spend with other queens.

Territory boundaries are maintained with visual and olfactory signals in the form of scratching on vertical surfaces, facial rubbing and deposition of urine and/or feces. Aggression is displayed by colony members to unfamiliar cats. After many interactions, over time non-colony members may be gradually accepted.⁷⁸

Feline senses

Vision

One of the reasons why cats are so appealing to people is their large, prominent eyes. Large eyes are necessary for seeing (and hunting) in dim light. Cats' eyes have many characteristics to maximize the visual field and the collection of light entering the eye and stimulating the retinal cells.⁷¹ The cornea is larger and more curved and therefore collects more light than the human eye. The retina has approximately 25 light-sensitive rods for every color-sensitive cone compared to about 20:1 in humans.⁷¹ The tapetum lucidum under the retina reflects light back to maximize the chance

of rods being stimulated. This layer is what makes cat eyes glow yellowish green when light is shone into them. These retinal differences allow cats to see in about one-fifth the light needed by humans.⁷¹ Cats have little need for color vision as they hunt mainly at night and most prey species do not have a wide range of coat colors. It appears that cats can see in the green–yellow spectrum and blue wavelengths of light and can be taught to distinguish between red and other colors.

The lens of the eye has a limited capacity for accommodation. This means cats are short-sighted, with their best vision being at about 75 cm (30 in) from the viewed object.⁷¹ To maximize visual acuity they have multifocal lenses, which focus light at particular wavelengths. The slit pupil prevents the loss of visual fields that can focus at set wavelengths and maximizes the cat's vision.⁸²

Binocular vision aids the cat in judging distances for catching prey, climbing, and jumping. The binocular overlap is about 98°, allowing cats to judge distances very accurately.^{71,83} Their accuracy is even more amazing considering they are short-sighted.

Hearing

The large mobile pinnae of cats act to collect and funnel sounds into the ear canal. Each ear can move independently of the other and the ears can swivel almost 180°, effectively giving them surround sound. When tracking a sound such as that of a prey animal, cats use a combination of the interaural time differences for sounds to reach both pinnae, level differences between the pinnae, and directional amplification effects of the pinnae to localize the sound and orientate their head.⁸⁴ They are able to do this as the prey animal and the cat are both moving.

Olfaction

Cats have a well-developed sense of smell at birth. These nerves are myelinated at birth, in contrast to most other neurons in the nervous system. This allows signals to pass rapidly to the brain. Kittens use their sense of smell and touch to find the queen's teats. If they are unable to smell, either experimentally or due to illness such as an upper respiratory infection, kittens cannot find the queen's nipples to feed.⁸⁵

Cats use their sense of smell for locating prey and for evaluating communication signals left by other cats. Odors play an important role in social organization of cats and in reproduction. The feline nasal mucosa is 20–40 cm², small when compared with that of dogs but still eclipsing the human nasal epithelium. To aid further in scent detection, the cat has two structures: the subethmoid shelf⁸³ and the vomeronasal organ (VNO).¹⁹

The subethmoid shelf traps air and scent particles taken into the nasal cavity, allowing more time for them to stimulate receptors in the olfactory mucosa. The VNO sits between the oral cavity and the nasal cavity. It has connections with the nasal cavity and the oral cavity. The receptors of the VNO are different from those of the nasal epithelium. The gape or flehmen response may be performed after the cat has sniffed or even licked at a scent source. By wrinkling the upper lip and opening the mouth, the cat opens the ducts

of the VNO and pumps saliva and the scent into the VNO.¹⁹ Cats cannot fully evert their upper lip like horses and cattle because of the frenulum between the upper lip and upper jaw. The gape reaction is seen when tom cats find urine from another cat. However, queens will also show the behavior.

Taste

They have two types of taste buds on their tongues: mushroom-shaped papillae at the front and sides of the tongue and cup-shaped papillae at the back of the tongue. Cats can taste salty, bitter, and acid. Like dogs, they also have water receptors. Cats have little reaction to sucrose and will tend to drink sweet water only if the sugar is masked by salt.

Touch

Cats have sensory nerves across their body surface, just as dogs and people do, and touch is important to cats. Touch may be one of the first senses developed and queens start nuzzling and licking kittens soon after birth. Like dogs, cats have many specialized touch receptors, including vibrissae on the face that can sense air flow. Many cats enjoy being petted, but their tolerance for prolonged tactile stimulation is quite variable between animals.

Feline communication

Cats send signals using body language, that is by changing their posture, the position of their limbs, and ears, the size of their pupils, and by fluffing themselves up. Cats are very expressive and it can help in learning cat communication signals to look at each area of the body separately. For body posture and facial expression resources see [Appendix B](#).

Visual communication

Specific signals

The size and shape of the body, the position of ears, size of pupils, size and position of the tail, and visibility of weapons such as teeth all convey important messages to others. In general, cats aiming to attack other individuals try to make themselves appear larger. They do this by standing at their full height and raising their hair. The tail will be raised and the hair fluffed too. When a cat really wants to convey a message to an opponent that it is ready to fight if the other does not back down, the cat will arch its back.

Ears

An interested cat will have its ears forward. A frightened cat will have its ears flat and backward-facing. Cats that are attempting to bluff another cat or that are not certain will hold their ears halfway between forward-facing and flat and backwards.

Eyes

Interested cats will look at the person or object of their interest. Cats will stare at other cats or people as an aggressive signal. This should not be confused with making friendly eye

contact. Aggressive stares are intense. Friendly eye contact can be soft and often the cat may blink in an exaggerated manner. Less confident cats and cats that wish to avoid a physical altercation will avoid looking at another cat or a person who is staring at them. In avoiding the eye contact, the cat may simply look away or, if it is feeling really uncomfortable, it may engage in some intensive washing, leading to an important feline rule of thumb: "When in doubt, wash." Often other cats will avoid looking at a cat who is engaged in a bout of composure grooming. In scientific language, the grooming behavior is a displacement behavior motivated by feeling threatened but unsure if it is best to run away or stay put.

Tail

Cat tails are extremely expressive and very rarely still. Vertical raised tails indicate amicable approach and familiar recognition.⁸⁶

Visual displays

Body language has to be understood as a combination of a variety of visual cues. From a practical perspective, there are four main postures with which any cat owner should be familiar: (1) friendly; (2) offensive; (3) defensive; and (4) appeasing.

The friendly approach

A cat gets closer to a person or another cat with a relaxed attitude and the tail in perpendicular to the ground. No other specific signs can be highlighted in this posture. This particular posture is only observed in two species of felines: the domestic cat and the African lion. Interestingly, these are two of the only three species of felines showing a gregarious social structure ([Figure 2.4](#)).

The offensive posture

There are many different signs of an aggressive attitude, which can be expressed in different levels of intensity. In its clearest



Figure 2.4 Friendly social approach. (Courtesy of Jaume Fatjo.)



Figure 2.5 Fearful cat: arched back, dilated pupils, piloerection. (Courtesy of Katey Cohen.)

form, the aggressive cat approaches a person or another cat with a straight-forward body posture, direct eye contact, and constricted pupils. A flagging of the tail tip indicates a high level of arousal. This general attitude is commonly observed in offensive/territorial aggression problems.

The defensive posture

Signs of fear are also diverse both in form and intensity. In its more typical form, the fearful cat stands in a lateral position and shows an arched back, piloerection, ears flattened, the corners of the mouth pulled back, diverted eye looking, and dilated pupils. The defensive posture is usually reactive to the approach of a person or another cat and expresses the desire to avoid that social interaction (Figure 2.5).

The appeasing posture

An appeasing posture is defined as one that induces relaxation or reduces the aggressive motivation of the other individual. According to this definition there is one display in the domestic cat that many authors believe is an appeasing posture. The cat showing this posture approaches another cat and rolls into its side or back. This is commonly observed as an appeasing attitude by young cats to adult males, as well as by kittens as an invitation to play. Purring is very often observed together with this body posture.

Auditory communication

Vocalizations convey general information on the underlying emotional or motivational state of the cat within four main contexts: (1) social conflicts; (2) sexual behavior; (3) parental behavior; and (4) interactions with people.

Problems related to inappropriate vocalization typically occur during estrus, but they are not exclusive of that situation. Many cats vocalize after having been moved to a new territory and in any situation linked to frustration, for instance when outdoor access is prevented.

More than 23 vocalizations have been described in cats. Nevertheless, from a practical perspective there are four that

deserve a closer attention: (1) meowing; (2) purring; (3) growling; and (4) hissing.

Meowing

Meowing appears in friendly interactions and finds its evolutionary roots in the vocalizations showed by kittens to get attention from their mothers. Cats tend to meow when separated from their owners and also when attempting to gain attention. For that reason the meow can very easily become a conditioned response through unconscious reinforcement. The cat soon discovers that vocalizing is a very effective way to obtain food, attention, or access to a particular area.

Purring

Purring results from the modulatory effect of the larynx on respiratory air flow. Purring is first observed in young kittens during the queen's lactation. It could possibly be a way for the kitten to communicate that everything is right and may contribute to reinforce the mother-infant bond. Adult individuals continue to purr in the context of social interactions and reproduction. Adult purring is understood as an appeasing or attention-seeking signal. A recent study found two patterns of purring in the domestic cat, which could serve different functions.⁸⁷

Growling

Growling is a vocalization of high intensity, long duration, and low frequency, which is typically observed in aggressive interactions.

Hissing

Hissing is an involuntary (autonomic) defensive response emitted with the mouth opened and the teeth exposed.

Tactile communication

From a practical perspective, tactile communication can be divided into two main patterns: allorubbing and allogrooming.

Allorubbing

In a friendly interaction, a cat may rub its head, body, and tail towards a person or another cat. Between cats, allorubbing is more frequently observed between females and between males and females.

Allorubbing helps to reinforce social bonds through the release of different neurotransmitters and neurohormones, including dopamine, endorphins, and oxytocin. In the African lion, allorubbing is observed after a period of social separation and could also play a role in reconciliation.⁷⁸

Allogrooming

Allogrooming refers to licking behavior directed at another cat. Although it has been suggested as behavior aimed to reinforce social bonds, allogrooming is also observed in

social conflicts. Often a cat that has showed allogrooming may attack the other cat afterwards.

Besides allorubbing and allogrooming, cats often seek physical contact with other cats during periods of rest. This behavior is understood as a sign of social tolerance and would indicate a good social relationship between the individuals who expressed it.

Human–cat communication

Within the framework of social relationships between people and cats, communication should be understood as a bidirectional phenomenon. Therefore, it is important for owners not only to understand feline communication but also to respond properly to the different signals emitted by a cat. From a practical perspective, two scenarios deserve special attention: (1) signals of aggression or fear; and (2) vocalization.

Signals of aggression or fear

In front of any sign of a fearful or an aggressive motivation, owners should always avoid physical or verbal punishment.

Furthermore, any attempt to interact with the cat even in a friendly way should be prevented. Owners must understand that their desire to interact is not necessarily coincident with the cat's motivational state at that particular moment. Approaching a cat showing distance-increasing signals can result in an episode of aggression and will contribute to perpetuate that avoidant.

Vocalization

Some feline vocalizations, particularly purring and meowing, can very easily turn into a way to get the owner's attention, food, or access to a preferred area. Thus, it is important for the owner not to pay attention to those vocalizations. Nevertheless, excessive vocalization can itself be a sign of a behavior problem and in some cases an indication of an underlying state of stress. Veterinarians should advise owners on the necessity to report to them any increase in the frequency or intensity of normal vocalization.

References

1. Markwell PJ, Thorne CJ. Early behavioural development of dogs. *J Small Anim Pract* 1987;28:984–91.
2. Bergman K, Sarkar P, O'Connor TG, et al. Maternal stress during pregnancy predicts cognitive ability and fearfulness in infancy. *J Am Acad Child Adolesc Psychiatry* 2007;46:1454–63.
3. Davis EP, Glynn LM, Schetter CD, et al. Prenatal exposure to maternal depression and cortisol influences infant temperament. *J Am Acad Child Adolesc Psychiatry* 2007;46:737–46.
4. Solano ME, Jago C, Pincus MK, et al. Highway to health; or how prenatal factors determine disease risks in the later life of the offspring. *J Reprod Immunol* 2011;90:3–8.
5. Graignic-Philippe R, Tordjman S. Effects of stress during pregnancy on infant and child development. *Arch Pediatr* 2009;16:1355–63.
6. McEwen BS. Understanding the potency of stressful early life experiences on brain and body function. *Metabolism* 2008;57(Suppl 2):S11–5.
7. Dahloff LE, Hard E, Larsson K. Influence of maternal stress on offspring sexual behaviour. *Anim Behav* 1977;25: 958–63.
8. Joffe JM. Genotype and prenatal and premating stress interact to affect adult behavior in rats. *Science* 1965;150: 1844–5.
9. Kapoor and Matthews. Short periods of prenatal stress affect growth, behaviour and hypothalamo–pituitary–adrenal axis activity in male guinea pig offspring. *J Physiol* 2005;566:967–77.
10. Randon E, Beach F. Effects of testosterone on ontogeny of urinary behavior in male and female dogs. *Horm Behav* 1985;19:36–51.
11. Fox MW. Canine behavior. Springfield, IL: Charles C. Thomas; 1965.
12. Thorne C. The Waltham book of dog and cat behavior. New York: Pergamon Press; 1992.
13. Fox MW. Socialization, environmental factors, and abnormal behavioral development in animals. In: Fox MW, editor. *Abnormal behavior in animals*. Philadelphia: WB Saunders; 1968.
14. Fredricson E, Gurney N, Doubois E. The relationship between environmental temperature and behavior in neonatal puppies. *J Pers* 1956;20:472–9.
15. Gazzano A, Mariti C, Notaro L, et al. Effects of early gentling and early environment on emotional development of puppies. *Appl Anim Behav Sci* 2008;110:294–304.
16. Serpell J, Jagoe JA. Early experience and the development of behavior. In: Serpell J, editor. *The domestic dog: its evolution, behavior and interaction with people*. Cambridge: Cambridge University Press; 1995.
17. Strain GM, Tedford BL, Jackson RM. Postnatal development of the brain stem auditory-evoked potential in dogs. *Am J Vet Res* 1991;52:410–5.
18. Parry HB, Tansley K, Thomson LC. Electroretinogram during development of hereditary retinal degeneration in the dog. *Br J Ophthalmol* 1955;39: 349–52.
19. Houpt KA. Domestic animal behavior for veterinarians and animal scientists. Ames, IA: Iowa State University Press; 2011.
20. Scott JP, Fuller JL. Genetics and social behavior of the dog. Chicago: University of Chicago Press; 1965.
21. Freedman DG, King JA, Elliot O. Critical period in the social development of dogs. *Science* 1961;133:1016–7.
22. Scott JP. Critical periods in behavioural development. *Science* 1962;138:948.
23. Martin P, Bateson P. Behavioral development in the cat. In: Turner D, Bateson P, editors. *The domestic cat: the biology of its behavior*. New York: Cambridge University Press; 1988.
24. Godbout M, Palestini C, Beauchamp G, et al. Puppy behavior at the veterinary clinic: a pilot study. *J Vet Behav* 2007;2:26–135.
25. Miklosi A. Dog behaviour, evolution and cognition. Oxford: Oxford University Press; 2007.
26. Hare B, Tomasello M. Human-like social skills in dogs. *Trends Cognit Sci* 2005;9:439–44.
27. Mech D. Whatever happened to the term alpha wolf? Available online at: www.wolf.org; 2008.
28. Feddersen-Petersen D. Social behavior of wolves and dogs. *Vet Q* 1994;16(Suppl 1):S51–S5.
29. Goodwin D, Bradshaw JWS, Wickens SM. Paedomorphosis affects agonistic visual

- signals of domestic dogs. *Anim Behav* 1997;53:297–304.
30. Boitani L, Ciucci P, Ortolani A. Behaviour and social ecology of free-ranging dogs. In: Jensen, P, editor. *The behavioural biology of dogs*. Wallingford, UK: CAB International; 2007. p. 147–65.
 31. van Kerkhove W. A fresh look at the wolf-pack theory of companion-animal dog social behavior. *J Appl Anim Welfare Sci* 2004;7:279–85.
 32. Semyonova A. The social organization of the domestic dog; a longitudinal study of domestic canine behavior and the ontogeny of domestic canine social systems. Available online at: <http://www.nonlineardogs.com/socialorganisation.html>; 2003.
 33. Bradshaw J. Dominance in domestic dogs: useful construct or bad habit. *J Vet Behav* 2008;3:176–78.
 34. Gasci M, Miklosi A, Varga O, et al. Are readers of our face readers of our minds? Dogs (*Canis familiaris*) show situation-dependent recognition of human's attention. *Anim Cogn* 2004;7:144–5.
 35. Blackwell EJ, Twells C, Seawright A, et al. The relationship between training methods and the occurrence of behavior problems, as reported by owners, in a population of domestic dogs. *J Vet Behav* 2008;3:207–17.
 36. Eskeland GE, Tillung RH, Bakken M. The importance of consistency in the training of dogs, the effect of punishment, rewards, control and attitude on obedience and problem behaviours in dogs. In: Landsberg G, Mattiello S, Mills D, editors. *Proceedings of the 6th IVBM / ECVBM-CA Fondazione Iniziative Zooprofilattiche e Zootechniche*. Brescia: IT; 2007; p. 179–180.
 37. Hsu Y, Sun L. Factors associated with aggressive responses in pet dogs. *Appl Anim Behav Sci* 2010;123:108–23.
 38. Herron ME, Shofer FS, Reisner IR. Survey of the use and outcome of confrontational and non-confrontational training methods in client-owned dogs showing undesired behaviors. *Appl Anim Behav Sci* 2009;117:47–54.
 39. Neitz J, Geist T, Jacobs GH. Color vision in dogs. *Visual Neurosci* 1989;3:119–25.
 40. Miller PE, Murphy CJ. 1995 Vision in dogs. *J Am Vet Med Assoc* 2007;12:1623–34.
 41. Fuller JL, DuBuis EM. The behavior of dogs. In: Hafez ESE, editor. *The behaviour of domestic animals*. Baltimore, Maryland: Williams & Wilkins; 1962.
 42. Thompson RF. *The brain: a neuroscience primer*. New York: WH Freeman; 1993.
 43. Gazit I, Terkel J. Domination of olfaction over vision in explosives detection by dogs. *Appl Anim Behav Sci* 2003;82:65–73.
 44. Harrington FH, Asa CS. Wolf communication. In: Mech LD, Boitani L, editors. *Wolves: behavior, ecology and conservation*. Chicago: University of Chicago Press; 2003. p. 83–6.
 45. Lindsay S. *Handbook of applied dog training*, vol. 1 Adaption and learning. Ames, IA: Iowa State University Press; 2000.
 46. Topal J, Gasci M, Miklosi A, et al. Attachment to humans: a comparative study on hand-reared wolves and differently socialized dog puppies. *Anim Behav* 2005;70:1367–75.
 47. Overall KL. How understanding normal cat behavior can help prevent behavior problems. *Vet Med* 1988;160.
 48. Smith B, Jensen G. Brain development in the feline. *Nutr Rep Int* 1977;16:487.
 49. Gallo PV, Werboff J, Knox K. Protein restriction during gestation and lactation: development of attachment behavior in cats. *Behav Neural Biol* 1980;29:216.
 50. Bateson P. Behavioural development in the cat. In: Turner D, Bateson P, editors. *The domestic cat: the biology of its behaviour*. 2nd ed. Cambridge: Cambridge University Press; 2000. p. 9.
 51. Beaver B. Reflex development in the kitten. *Appl Anim Ethol* 1978;4:93.
 52. Beaver BV. *Feline behavior: a guide for veterinarians*. St. Louis: Saunders Elsevier; 1992. p. 21.
 53. Mellen J. Effects of early rearing experience on subsequent adult sexual behavior using domestic cats (*Felis catus*) as a model for exotic small felids. *Zoo Biol* 1992;11:17.
 54. Seitz PFD. Infantile experience and adult behavior in animal subjects: II. Age of separation from the mother and adult behavior in the cat. *Psychosom Med* 1959;21:353.
 55. Chon E. The effects of queen (*Felis sylvestris*)-rearing versus hand-rearing on feline aggression and other problematic behaviors. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. p. 201.
 56. Meier G. Infantile handling and development in Siamese kittens. *J Comp Physiol Psychol* 1961;54:284.
 57. Wilson M, Warren JM, Abbott L. Infantile stimulation, activity, and learning by cats. *Child Dev* 1965;36:843.
 58. Collard RR. Fear of strangers and play behavior in kittens varied with social experience. *Child Dev* 1967;38:877.
 59. Karsh EB. Factors influencing the socialization of cats to people. In: Anderson RK, Hart BL, Hart LA, editors. *The pet connection: Its influence on our health and quality of life*. Minneapolis: University of Minnesota Press; 1984. p. 207–15.
 60. Karsh E. The effects of early handling on the development of social bonds between cats and people. In: Katcher A, Beck A, editors. *New perspectives on our lives with companion animals*. Philadelphia: University of Pennsylvania Press; 1983. p. 22.
 61. Rodel H. *Faktoren, die den Aufbau einer Mensch-Katze-Beziehung beeinflussen*. Thesis. Switzerland: University of Zurich-Irchel; 1986.
 62. Mendl M. The effects of litter-size variation on the development of play behaviour in the domestic cat: litters of one and two. *Anim Behav* 1988;36:20.
 63. Geering K. *Der Einfluss der Fütterung auf die Katze-Mensch-Beziehung*. Thesis. Switzerland: University of Zurich-Irchel; 1986.
 64. Turner DC. *Die Mensch-Katze-Beziehung: Ethologische und psychologische Aspekte*. Jena: Gustavfischer Verlag/Enke Verlag; 1995.
 65. Turner D. The human-cat relationship. In: Turner D, Bateson P, editors. *The domestic cat: the biology of its behaviour*. 2nd ed. Cambridge: Cambridge University Press; 2000. p. 194.
 66. Caro TM. Effects of the mother, object play, and adult experience on predation in cats. *Behav Neural Biol* 1980;29:29.
 67. Kolb B, Nonneman AJ. The development of social responsiveness in kittens. *Anim Behav* 1975;23:368.
 68. Baerands van Room J, Baerands G. *The morphogenesis of the behaviour of the domestic cat*. Amsterdam: Elsevier Science; 1978.
 69. Lowe SE, Bradshaw JW. Ontogeny of individuality in the domestic cat in the home environment. *Anim Behav* 2001;61:231.
 70. McCune S. The impact of paternity and early socialisation on the development of cats' behaviour to people and novel objects. *Appl Anim Behav Sci* 1995;45:109.
 71. Beaver B. *Feline behavior: a guide for veterinarians*. 2nd ed. St. Louis: Saunders Elsevier; 2003.
 72. Barrett P, Bateson P. The development of play in cats. *Behaviour* 1978;66:106.
 73. Caro TM. The effects of experience on the predatory patterns of cats. *Behav Neural Biol* 1980;29:1.
 74. Tan PL, Counsilman JJ. The influence of weaning on prey-catching behaviour in kittens. *Z Tierpsychol* 1985;70:148.
 75. Hall SL, Bradshaw JWS. The influence of hunger on object play by adult domestic cats. *Appl Anim Behav Sci* 1998;58:143.
 76. Serpell J. Domestication and history of the cat. In: Turner D, Bateson P, editors. *The domestic cat: the biology of its behaviour*. 2nd ed. Cambridge, 2000: Cambridge University Press; 2000. p. 179–92.
 77. Iwaza M, Doi T. Flexibility of the social system of the feral cat, *Felis catus*. *Anim Soc* 1994;29:237–46.
 78. Crowell-Davis SL, Curtis TM, Knowles RJ. Social organization in the cat: a modern understanding. *J Feline Med Surg* 2004;6:19–28.

79. Alger JM, Alger SE. Cat culture: the social world of a cat shelter. Philadelphia: Temple University Press; 2005.
80. Curtis TM, Knowles RJ, Crowell-Davis SL. Influence of familiarity and relatedness on proximity and allogrooming in domestic cats (*Felis catus*). American Journal of Veterinary Research 2003;64:1151–4.
81. Macdonald DW, Yamaguchi N, Kerby G. Group-living in the domestic cat: its sociobiology and epidemiology. In: Turner DC, Bateson P, editors. The Domestic cat: the Biology of its Behaviour, 2nd ed. Cambridge: Cambridge University Press; 2000. p. 95–118.
82. Malmstrom T, Kroger RHH. Pupil shapes and lens optics in the eyes of terrestrial vertebrates. J Exp Biol 2006;209:18–25.
83. Fogle B. The cat's mind. London: Penguin; 1991.
84. Beitel RE. Acoustic pursuit of invisible moving targets by cats. J Acoustic Soc Am 1999;105:3449–53.
85. Kovach JK, Kling A. Mechanisms of neonate sucking behaviour in the kitten. Anim Behav 1967;15:91–101.
86. Cafazzo S, Natoli E. The social function of tail up in the domestic cat (*Felis silvestris catus*). Behav Processes 2009;80:60–6.
87. McComb K, Taylor AM, Wilson C, et al. The cry embedded within the purr. Curr Biol 2009;19:507–8.

Recommended reading

- Bateson P. Behavioural development in the cat. In: Turner D, Bateson P, editors. The domestic cat: the biology of its behavior. 2nd ed. New York: Cambridge University Press; 2000. p. 9–22.
- Harrington FH, Asa CS. Wolf communication. In: Mech D, Boitani L, editors. Wolves: behavior, ecology and conservation. Chicago: The University of Chicago Press; 2003. 66–103.
- Heiblum M. Medicina del comportamiento canino para el clínico veterinario. Buenos Aires, Argentina: Intermédica; 2011.
- Maynard Smith J, Harper D. Animal signals. Oxford Series in Ecology and Evolution. Oxford: Oxford University Press; 2003.
- Miklosi A. Dog behaviour, evolution and cognition. Oxford: Oxford University Press; 2007.
- Scott JP, Fuller JL. Genetics and the social behavior of the dog. Chicago, IL: The University of Chicago Press; 1965.
- Serpell J, editor. The domestic dog: its evolution, behavior, and interaction with people. Cambridge: Cambridge University Press; 1995.
- Turner D, Bateson P, editors. The domestic cat: the biology of its behavior. 2nd ed. Cambridge: Cambridge University Press; 2000.
- Tuzio H, Elston T, Richards J, et al. AAFP Feline Behaviour Guidelines, http://www.catvets.com/uploads/PDF/Feline_Behavior_Guidelines.pdf; 2004.

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Pet selection and the genetics of behavior

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Pet selection

One of the most valuable services a veterinarian can perform for clients is to assist them in picking the pet that best suits their home and lifestyle. This is an extremely useful but underutilized facet of veterinary practice. Insufficient effort and forethought about the selection of a pet, and about the preparation for its arrival, are major factors associated with later relinquishment and euthanasia. Some owners spend more time picking a houseplant than they do a pet that will live with them for over a decade.

A prepurchase selection consultation is the best way to determine the needs of the prospective owner. There are several ways of determining whether the family is suited to pet ownership and, if so, which type of pet would be most compatible. Most veterinary associations, kennel groups, breed clubs, and humane societies have produced useful handouts and/or have websites on the subject (www.akc.org, www.ckc.ca, www.thekennelclub.org.uk, www.avma.org, www.ovma.org). Everyone has a stake in making sure the right pet ends up in the right household (Table 3.1).

Some veterinarians feel uncomfortable discussing pet selection because they don't know much about the process, other than the medical consequences. Acquiring a pet is an emotional experience, and veterinarians would do well to put themselves in the place of clients when considering what recommendations to make. You may need to consider what kind of pet would be best for a young family that has never owned a dog or cat before. How about a family without children whose home is lavishly and expensively decorated? Consider the widow on a pension who loves animals but

can't afford to spend much on the purchase and upkeep of a pet (Box 3.1).

Because the pet selection consultation is so important, a questionnaire that provides all the necessary information for making an informed recommendation can be very helpful. Appendix C, form C.1 (client form #13, printable version available online) is a client handout that can be utilized to collect information that will need to be considered for the pet selection consultation. It should be made clear to the client, however, that it is not the role of the consultant to choose a particular breed, age, or sex for the family. Rather, the consultant should discuss the advantages as well as any concerns about each breed, and give suggestions on sex, age, and how to choose an individual dog or cat.

Be certain also to take the opportunity at the selection consultation to provide the family with the health, feeding, and housing information and in particular behavior and training that they will need to get started on the right track. Setting realistic expectations and providing behavioral advice at each puppy or kitten visit can lower the risk for future relinquishment.^{1,2}

Breed considerations

The primary focus of selective breeding was to develop dogs that were best able to perform specific working functions such as herding, hunting, retrieving, or protection as well as more specific tasks such as search and rescue. Many dogs continue to be bred for working ability or for more specialized tasks such as therapy and assistance dogs, while others are bred specifically for show. Therefore there can be dra-

Table 3.1 Breed selector tools on the internet

Organization	Website
Animal Planet	http://animal.discovery.com/breedselector/dogselectorindex.do
Purina	http://www.purina.com/dog/breed-selector/default.aspx
Dog Breed Info	http://www.dogbreedinfo.com/search.htm
Puppyfinder	http://www.puppyfinder.com/breedselector.php
Breeder Retriever	http://www.breederretriever.com/breedselector.php
Select Smart	http://www.selectsmart.com/DOG/
5-Star Dog	http://www.5stardog.com/dog-breed-selector.aspx
Good Housekeeping	http://www.goodhousekeeping.com/family/pets/dog-breed-quiz
Pet Care Information and Advisory Service	http://www.petnet.com.au/selectapet/choose-a-pet

Box 3.1 Factors for consideration in pet selection

- Species (dog, cat)
- Breed (purebred versus mixed)
 - Heritable medical and behavioral problems
 - Hybrid vigor
 - Breeding versus pet quality
- Age (puppy, kitten versus adult)
- Physical characteristics
 - General appearance
 - Size
 - Haircoat
- Breed behavioral characteristics
 - Breed function / work
 - Activity requirements
 - Temperament
 - Protective behavior / tendency to bark
- Sex (male versus female; neutered versus intact)
- Source (breeder, shelter, private home, retail) – assess care and upbringing
- Parent assessment (behavior, physical appearance, health)
- Client considerations
 - Purpose of pet ownership – pet's function
 - Expense
 - Limitations of family members (e.g., allergy, disabilities)
 - Schedules and activities of family
 - Family's experience with pets
 - Environment – type of home, location, fencing

matic differences between the behavioral needs and temperament of working lines and show lines.

By selecting a mixed-breed animal from a shelter, an abandoned animal can be saved from death, and the initial cost is very reasonable. One can even argue that there are genetic advantages to obtaining mixed-breed animals ("hybrid

vigor"). Selective breeding has produced dogs with a range of extreme proportions from giant breed to toy and from brachycephalic to chondrodysplastic, which in turn contributes to health problems. Furthermore, inbreeding increases the likelihood of heritable diseases of both health and behavior.^{3,4} Eliminating genetic defects requires the identification and removal of affected individuals from the breeding pool, yet ironically, removal of these individuals further narrows the breeding pool. Therefore, outbreeding or even cross-breeding may be the most practical solution. Although kennel clubs and breed associations would be resistant to cross-breeding, this is the very way that today's breeds were originally developed.⁵

Therefore the issues with respect to breed selection are: (1) whether the prospective owner wants a purebred pet; (2) understanding the function for which the breed was originally developed; (3) whether the dogs are bred for work or show; (4) the potential health and behavior issues of the breed; and (5) whether the dog is likely to be suitable to the owner's home, lifestyle, and goals of pet ownership. Despite the downsides to inbreeding, predictability is likely to be highest for size, coat, function, health, and behavior from selecting a purebred dog with known parentage (Box 3.1).

With well over a thousand breeds of dogs to choose from, it is advisable that the owners first narrow the selection process down to a few breeds that appeal to them before attending a selection consult at your clinic. This can be accomplished by providing suggested reading and websites (see Appendix C, form C.1, client form #13, printable version available online), as well as having the client attend some dog or cat shows to see a variety of breeds and meet some breeders or handlers. The owners might also be encouraged to contact groomers, trainers, or kennel clubs for additional input. The websites of national kennel clubs and veterinary organizations can provide useful information on pet selection for your clients. Another option is to visit one of the computerized selection services on the internet (Table 3.1).

Two of the most important aspects of pet selection include determining the family's reason for owning a pet as well as any limitations for owning certain types of pets. This may not only help to choose the right type of pet but also eliminate certain breeds from consideration (Table 3.2). For example, a family that is interested in obtaining a pet primarily for companionship might be interested in engaging in agility training, flyball, or herding trials, or might be a sedentary couple or incapable of providing intensive exercise or training. Similarly, potential pet owners may want to consider breeds for a particular type of work (herding, hunting, household protection), for a particular size range, or because a family member has allergies.

If an owner then has a query about a breed with which you are less familiar, be prepared to do the research before you make your recommendations. If you take the time to document pros and cons for each breed as you experience or read about them, eventually you will have an impressive array of facts for the would-be owner. In addition, you should collect a good library of books, journals, and websites since the owners will need information on:

- breed standards (physical requirements)
- breed function (i.e., the selection pressures on this breed when it was developed)

Table 3.2 Breed tendencies that might be important in the selection process

Condition	Breed(s)
Tendency to drool and slobber	Basset hound, black and tan coonhound, bloodhound, bluetick coonhound, boxer, bullmastiff, Chinese shar-pei, Clumber spaniel, Dogue de Bordeaux, English bulldog, English setter, French bulldog, great Dane, great Pyrenees, Irish water spaniel, Kuvasz, mastiff, Neapolitan mastiff, Newfoundland, Plott hound, Pyrenean mastiff, redbone coonhound, Saint Bernard, Spanish mastiff
Tendency to snore	Boston terrier, boxer, Chinese shar-pei, English bulldog, English toy spaniel, French bulldog, Pekingese, pug, Shih-tzu
Tendency to shed	Akita, Alaskan malamute, American Eskimo dog, beagle, Belgian sheepdog, Belgian Tervuren, Bernese Mountain dog, Boston terrier, Chow chow, Dalmatian, German shepherd dog, great Pyrenees, Keeshond, Lakeland terrier, Maltese, Newfoundland, Pekingese, Pomeranian, Pug, Samoyed, Shetland sheepdog, Shiba Inu, Shih tzu, Siberian husky, Sussex spaniel
Considered less troublesome for those with pet allergies*	Affenpinscher, American hairless terrier, Bedlington terrier, Bichon frisé, Bolognese, Bouvier des Flandres, Chinese crested, Coton de Tulear, Dandie dinmont terrier, giant schnauzer, Havanese, Irish water spaniel, Lagotto romagnolo, Lhasa apso, Maltese, miniature poodle, Peruvian Inca orchid, poodle, Polish lowland sheepdog, Portuguese water dog, Puli, Silky terrier, Skye terrier, soft-coated wheaten terrier, standard schnauzer, Welsh terrier, Xoloitzcuintli, Yorkshire terrier
*Not necessarily nonallergenic or hypoallergenic, but tends to shed less and/or produce less dander. However, studies have demonstrated that there does not appear to be any significant difference in the levels of the major dog allergen (Can f 1), regardless of breed. ¹	
¹ Nicholas CE, Wegienka GR, Havstad, SL, et al. Dog allergen levels in homes with hypoallergenic compared with nonhypoallergenic dogs. <i>Am J Rhinol Allergy</i> 2011;25:252–256.	

- potential genetic and health problems
- breed behavioral characteristics
- behavior problems that have been reported or documented in the breed.

Although there are a number of books that provide breed behavioral profiles (see [recommended reading](#), below) there can be a great deal of variability between lines, across different geographical areas, and even between individuals within the same litter. Veterinarians should have some idea of the characteristics that are most predictable (e.g., watchdog ability in Rottweilers, vocalization in Siamese cats, and chase in herding breeds) and which traits are more affected by environment and training such as destructiveness and house-soiling. Veterinarians should also be cognizant of potential problems such as tendencies toward aggression, high activity level, fear, sensitivity to pain and noise, and specific conditions such as flank sucking in Doberman Pinschers, wool sucking in Siamese cats, spinning in bull terriers and impulse dyscontrol aggression in English Cocker spaniels and English Springer spaniels.

Pet age

Puppies less than 3 months and kittens less than 9 weeks are most receptive to socialization, adapting to new environments and habituating to new stimuli. Young pets may also be a better mix for families with existing pets. Conversely, puppies and kittens require a committed family to provide the appropriate time and energy to socialize properly and train the puppy or kitten at this highly impressionable age. Adult dogs and cats may already be insufficiently socialized or improperly trained so that problems may be difficult or impossible to correct. Adult pets may have difficulty adapting to an environment or social group that is dissimilar from their previous household. By comparison, adult pets may be able to handle longer owner departures, may present fewer problems with overexuberant play, nipping, and chewing, and may already have some basic training. In one study, owners reported more problems especially with respect to aggressive play when first adopting young cats compared to adult cats.⁶ In addition, while behavior assessment tests in young puppies and kittens may be poorly predictive of adult behavior, predictability may be greater when assessing older puppies and kittens and adult pets (see below).

Pet gender

Male dogs and cats are slightly larger in stature than females. Male dogs may mark, mount, masturbate, and display aggression toward other male dogs. Gonadectomy decreases gonadal steroid hormones and has been correlated with a decrease in sexually dimorphic behaviors.^{2,7–11} Working dog trainability does not appear to be altered by gonadectomy in general, nor with the age of the dog at the time of gonadectomy.¹²

Neutering may affect a variety of behaviors but results of neutering studies have been somewhat conflicting. One study suggested marking, mounting, masturbation, and aggression toward other male dogs and territorial aggression might be prevented or reduced by castration.¹³ However, another study found no effect of neutering on intermale aggression, roaming, or mounting.¹⁴ One other study suggested that neutering does not appear to decrease the likelihood of aggression in male dogs, with perhaps the exception of some cases of territorial and intermale aggression.¹⁵

A study of pet dogs suggested that male dogs are more likely to score above the median on owner-directed aggression, and dogs that were neutered/spayed were less likely to score above the median on owner-directed aggression than intact individuals.¹⁶ A study found that the odds ratio of biting a member of the household was highest for neutered male dogs followed by neutered female dogs and intact male dogs, and the lowest level by intact females.¹⁷ Similar effects were seen for growling and possessive aggression.¹⁷ In another study, intact males were 1.68 (95% confidence interval (CI) 1.05–2.71) times more likely to bite than castrated males, but 0.80 (95% CI 0.55–1.14) times as likely to bite as intact females.¹⁸

Some studies suggest that spayed females are more likely to display certain types of aggression when compared with intact females.^{19,20} An increase in reactivity toward humans with unfamiliar dogs and in aggression toward family members has been reported after ovariectomy of

bitches in several studies.^{19–21} While the cause has not been determined, it may be due to a decrease in estrogen and oxytocin concentrations, both of which may have some antianxiety effects.²²

Ovariohysterectomy (spaying) of dogs and cats eliminates behaviors associated with estrus cycles and pseudocyesis in dogs. Castration of both dogs and cats reduces, but may not eliminate, sexual interest in females. Castration of male cats reduces urine odor and decreases sexually dimorphic behaviors such as fighting, spraying, and roaming, but has no effect on hunting.²³ However since the masculinization of the brain in males occurs prior to birth, male–female differences may persist even after neutering. For example, about 10% of spayed female cats and 5% of castrated males will mark territory with urine.^{11,23}

Recent reports have suggested other behavioral changes following gonadectomy. A large-scale study of dogs indicated that noise phobias may increase, while separation anxiety and submissive urination may be less frequent in dogs that were neutered before 5 months of age.⁸ Some studies suggest an increased frequency of separation anxiety in neutered pets.^{24,25} In another study, neutered dogs were found to be more nervous or timid than sexually intact dogs, but they were also rated as less anxious and engaged in less destructive activity.²⁶

As we gather more information regarding how gonadectomy influences behavior, there is conflicting information and still many unanswered questions, with the situation seeming somewhat muddier rather than clearer.

Source

The best source for a purebred pet is a reputable breeder, although rescue groups and shelters may also be good options. If puppies and kittens are obtained directly from the breeder, the buyer can better assess and ensure that they have been properly cared for and have had sufficient human contact (see [Chapter 2](#)).²⁷ The breeder also may have the parents available so that their health and behavior can be assessed. The temperament, size, coat, and personality of a puppy or kitten will often resemble those of its parents when grown. Studies in cats have clearly demonstrated that paternal genes are more likely to influence boldness, resistance to handling or restraint, and perhaps even friendliness.^{27,28} Therefore, whenever possible, especially in cats, observe and assess the father. Reputable breeders should be happy to provide references (veterinarians, previous buyers) and should be proud to show you their kennel/cattery and other dogs/cats.

Purebred dogs and cats that are obtained from pet stores, breeding farms, puppy mills, and animal shelters usually have unknown medical and genetic histories. They are stressed by weaning, transport, handling, and housing, and have high levels of exposure to other animals at a time when their resistance is low or suspect. They are also at higher risk for respiratory and intestinal diseases than those from private owners.²⁹

Saving the life of a pet from a breed rescue organization or shelter could be seen as a gallant gesture, but the owner must be counseled about potential risks. Sometimes the background and reason for relinquishment are known, but often the quality of the previous environment and the extent

of socialization are questionable. In fact, health or behavior issues may have been a factor in relinquishment. For mixed-breed dogs, DNA testing is now commercially available to determine from what breeds it is derived. These tests, although not 100% accurate, may prove to be useful in determining the behavioral needs of the pet, behavioral expectations, and potential health concerns that might arise. In one study of 20 mixed-breed dogs, in only four of the dogs did the DNA testing match with the breed type that had been selected based on visual identification.³⁰ Laboratories that can perform such testing can be found online at www.wisdompanel.com, www.healthgene.com, and many others.

Many owners decide on a particular breed because of a pet that they have met through a relative, friend, or acquaintance. If that pet is healthy and has a desirable personality, it may be possible to contact the breeder to see if brothers or sisters from more recent litters might be available. Veterinarians might also consider collecting listings of breeders who have proven to produce problem-free pets. In addition, the kennel clubs of most countries (e.g., American Kennel Club, Canadian Kennel Club, Cat Fancier's Association, The Kennel Club, Fédération Cynologique Internationale) publish directories of breed and rescue associations either in print or on the web. The internet is also a wonderful searchable source of such information, with images of the available pets typically provided.

Temperament testing

Although a number of puppy temperament tests have been developed (e.g., http://www.workingdogs.com/testing_volhard.htm), there is no evidence that they accurately predict adult behavior, with the exception of fear and anxiety.^{31–35} One study that looked at puppy biting found no correlation with the development of aggression at 1 and 3 years.³⁶ Testing of 8–16-week-old puppies was not predictive for separation anxiety.³⁷ On the other hand, in a study in which puppies were assessed during veterinary visits between 8 and 16 weeks of age, about 10% of puppies displayed extreme behaviors (i.e., outliers), including vocalization, panting, ears flattened, and avoidance, that were in fact correlated with data collected 1 year later.^{33,38} It also appears that, with increasing age, perhaps beginning as early as 3 months, assessment testing will have increased predictive value as problems such as possessive aggression, territorial aggression and barking, resistance to handling, and new fears begin to arise.^{31,34,39–42} In addition there is variability as to when specific traits might be identifiable for specific functions, such as with police or service dogs. For example, when testing potential police dogs, retrieval was predictable at 8 weeks of age, while testing for aggression was not predictable until 9 months.³¹ Therefore, when selecting a puppy, the prospective owner should combine breed information and observation of the parents, along with evaluation of the puppy to identify extremes of behavior, including fear, avoidance, or excessive reactivity, that might be warning signs for future problems.

A number of assessment tests have also been developed for shelter dogs to assist in matching and adoption success.^{43–46} These tests assess factors such as the dog's response to cage approach, room behavior, handling, toys,

food, men, toddlers, dolls, and other dogs.³⁰ However, regardless of test score, the best success is most likely to be achieved when assessment tests can be combined with the information collected at relinquishment (intake profiles) to determine what would be the most appropriate home, the problems that are most likely to arise, and the training advice that should be provided.^{44,46,47-49}

To assess for possible aggression many shelter tests have protocols which include tools such as assess-a-hand or a child-like doll to avoid the potential for injury; however, these tests do not necessarily predict the response to actual scenarios such as reaching by a human hand or hugging, cuddling, and playing with children (situations in which dog bites are often reported).^{41,43-46,50-52} However, certain types of aggression, such as predatory, territorial, and intraspecific, may not be identified using temperament tests.⁵³ In one standardized, validated test (MAG test), a set of 16 subtests is utilized, eight in the owner's presence and eight in the owner's absence, including approach and petting by a stranger using an artificial hand, and exposure to a doll, an unfamiliar dog, visual and acoustic stimuli, and three people surrounding the dog, to assess a dog's potential for aggression.⁵⁴

For cats, the sensitive period for socialization begins to wane by 9 weeks of age. Therefore, the assessment of kitten temperament at this age may be more accurate than for puppies of an equivalent age. Cats consistently fall into two personality types: sociable, confident, easy-going, or trusting, and timid, nervous, and aggressive.⁵⁵ In fact, approximately 15% of cats seem to be resistant to socialization with humans, which may be genetically based.⁵⁶ Testing of adult cats, although not well validated, may be predictive of temperament in the home. In one study, cats were assessed by approach, calling, lifting, sitting on a lap, petted, moving a toy, grabbing, dropping a heavy object, and response to strangers. These cats could be divided into three groups, with the most positive scores being predictive of a positive result in the new home.^{57,58}

Behavioral genetics

With work done on the human genome project, as well as the canine genome project and feline genome project, major advances are being made in the linkage of traits (both physical and behavioral) with gene mutations. While we are currently not in a position to identify tail chasing in bull terriers or rage syndrome in English Springer spaniels with a direct DNA test, the time may not be far off. While dogs and cats (and humans) are clearly a lot more than their collective DNA, the field of behavioral genetics is coming into its own as gene mutations are being recognized that have a direct effect on behavior.

In human medicine, a great stride was made when fragile X syndrome, the first single-gene cause of mental retardation, was identified. Since then a wide variety of syndromes and genes have been identified that have cognitive and personality sequelae. This is not surprising since we suspect that approximately 30% of the estimated 20 000 or so genes in the human genome are expressed primarily in the brain, and of course it is the brain that governs everything humans do, think, or perceive. Should we suspect otherwise in animals?

Genetics plays a key role in predicting behaviors, and yet we are very early in the process of characterizing the process. Behaviors such as herding and retrieving are firmly entrenched in some breeds and we are getting closer to understanding the genetic basis for these traits. The same can be said for trainability and boldness in dogs.⁵⁹ In addition, it appears that dogs have evolved a social-cognitive specialization that allows them unusual skill in cooperating and communicating with humans.⁶⁰ In fact, dogs and humans accept each other into a mutual social structure, which appears to have been the result of genetic selection.⁶¹ Behavioral traits do have a genetic basis, and there is often a high degree of genetic correlation between traits.⁶²

There have been some developments in identifying quantitative trait loci (QTLs) important in some behavioral conditions, but there is much more to be learned in years to come. Since behaviors are often conserved within breed groups, individual qualities (e.g., retrieving ability) can often be achieved by the appropriate selection of specific breeds, especially if representative family members can be observed. For mixed-breed dogs, a rough approximation might be accomplished by discerning which breeds primarily contributed to an individual animal through commercially available breed-testing profiles (www.wisdompanel.com, www.healthgene.com, www.vetdnacenter.com).

Grounds to suspect a genetic basis for behavioral problems

We clearly appreciate several inherited behavior traits in animals, including the sophisticated herding ability of the Border collie, the signaling antics of the Nova Scotia duck-tolling retriever, the tracking ability of many hounds, and the fetching ability of many retrievers. In fact, most of the breeds created today have unique physical and behavioral traits, which have been accentuated with each passing generation. There is no reason to suspect that many other behavioral traits, good and bad, are not heritable to at least some extent. Shyness or fearfulness appears to demonstrate high heritability,⁶³ for example. The domestication of dogs has probably gone on for the past 12 000 years or so, and there is little to indicate that the process will not continue.

In dogs, there is interesting evidence to suggest that the species was domesticated intentionally, with selection to retain juvenile traits, a process known as pedomorphosis. Thus, both physical and behavioral traits of the young, such as skulls that are unusually broad for their length, whining, barking, and submissiveness, are retained in dogs throughout their lifespan, but are typically outgrown by wolves as they mature. Domestication of many species has led to interesting traits not seen in the wild, such as the appearance of dwarf and giant varieties, piebald coat color, curly tails, rolled tails, shortened tails, floppy ears, and changes in reproductive cycles. It is reasonable to predict that selection for tameness may alter regulatory mechanisms for neurochemistry, and the developmental pathways they govern. It is not unreasonable to conclude that anomalies in these behaviors could have both heritable and environmental components.

When it comes to traits like aggression, we suspect that heritability probably plays some role in addition to environmental causes. Nature versus nurture needn't be a zero-sum game. For several years investigators have examined how two neurotransmitters, serotonin and vasopressin, interact to control aggression. In many species, aggressive behavior is inversely correlated with the level of serotonin in the brain. Vasopressin seems to have the opposite effect. In fact, serotonin may decrease aggressive behavior, in part, by inhibiting the activity of the vasopressin neurons. Potentially, an inefficient serotonin system may let vasopressin build up in the central nervous system, priming the body for aggressive behavior. The important point to be made here is that there is unlikely to be an aggression gene that codes for surly canines. It is more likely that a gene exists that codes for some protein that codes for variable functionality of serotonin and which, in turn, alters other neurotransmitters, including vasopressin and many others.

The other likelihood is that genetics alone is probably not sufficient for clinical manifestations of disorders like aggression. We know of the critical socialization period for dogs (and cats), and that tractability is directly related to whether or not animals were properly socialized during that period. This could serve as one of the many potential triggers for clinical forms of aggression. So, theoretically, a dog could have a genetic predisposition toward aggression, but it only becomes clinically manifested if the dog was improperly socialized during the critical period, or affected by some other trigger, such as diet, hormonal levels, or any number of other potential moderators of behavior. Does this likely occur in dogs? Probably. Some believe that supplementing the diet of a dog with dominance aggression with tryptophan and changing to a low-protein diet with a high relative tryptophan to large neutral amino acids ratio may reduce aggression. The rationale here is that tryptophan is a precursor of serotonin and that supplementation with tryptophan (or relatively increasing the ratio of tryptophan to competing amino acids) will increase brain serotonin levels and reduce aggression. The presumption is thus that aggression is somehow associated with defective neurotransmitter metabolism, which is likely (at least partially) a heritable event that can be moderated, at least in part, by diet (see [Chapter 10](#)).

Genes causing behavioral problems

Hoping that genetics will explain all behavioral problems is simplistic, and does not reflect the way that genes actually work. Genes don't cause disorders – they code for proteins that interact with other proteins and the environment to cause variable effects. Even in single-gene defects such as von Willebrand disease in Doberman Pinschers, the resultant level of von Willebrand factor is a continuous trait that does not match well with our clinical impression of a classic recessive disorder. Thus, while an individual animal with this monogenic disorder is clear, affected, or a carrier, there is a huge overlap in von Willebrand factor levels between carrier and affected individuals. It is this variability in expressivity that keenly complicates our understanding of even simple genetic disorders and confounds our ability to appreciate complex relationships between genes, proteins, and environmental impact. So, while we have successfully navigated the genomic revolution, a much more complicated fate awaits

us as we start to investigate the new field of proteomics, an arena in which we must contend not with 20 000 or so genes written in a four-letter alphabet, but the mind-boggling world of a million proteins written in combinations of 20 amino acids. The structure of these proteins is important, but it is the patterns in which they fold three-dimensionally, and their interaction with other proteins and the universe around them, that produces almost infinite variability in presentation. Thus, in human medicine, having a hypothetical “gene for schizophrenia” may indicate at least a 50% risk of developing the condition, but it is not a foregone conclusion that having the gene mutation makes schizophrenia inevitable.

Another likelihood, as we explore the genetics of behavioral conditions is that different mutations in different genes may cause the same end result. For example, familial Alzheimer's disease has been associated with at least three mutations, for presenilins 1 and 2, and for amyloid precursor protein. For most behavioral problems seen in animals, we are not expecting to find a single genetic mutation responsible for a major behavioral problem, such as aggression. Even if aggression was controlled by a single genetic mutation in one breed, we would not expect it necessarily to be the same in other breeds. For example, the gene that causes progressive retinal atrophy (PRA) in the Irish Setter is significantly different from the gene that causes PRA in the Siberian Husky, or the Cardigan Welsh Corgi, for that matter. Accordingly, while there are DNA tests for PRA in each of these breeds (and in several others), the mutation seen in one breed is rarely shared with other than closely related breeds. Thus, while Siberian Huskies share the same gene mutation with Samoyeds and the DNA test can therefore be used in both breeds, this is fortuitous (given the potential relatedness of those breeds) rather than commonplace. So, even if we ever developed a DNA test for aggression (or a compulsive disorder, for example) in a particular breed, we should not presume that the behavior results from that same mutation in other breeds as well.

Unfortunately, for the majority of behavioral problems seen in animals (and humans), we are not expecting to find a single genetic mutation to explain the problem. For these types of continuous traits that exist along a spectrum of behaviors, attempts have been made to map contributing genes with QTL. Polygenic traits are usually caused by a relative handful of genes rather than many genes. This bolsters our hopes that genetic tests will eventually be available for most complex problems, including aggression and compulsive disorders (as well as hip dysplasia and many other heritable problems). It remains possible, for these and other complex disorders, that there may be a small number of genes that have fairly major effects and a larger number of genes that play a more minor role. If this is true, it should make the task of finding at least the first few QTLs that much easier.

Quantitative traits vary on a continuous scale and are determined by the action of genes at many loci (QTLs) as well as by many nongenetic environmental factors.⁶⁴ These QTLs are regions of DNA that have been associated with phenotypic traits; they may be located on different chromosomes, they may have a major or minor influence on expression of the trait, and they may raise or lower the risk of that trait manifestation. While still in its infancy, this approach

will likely become extremely important as we look to determine risk for the development of traits controlled by more than one gene, such as diabetes mellitus, cancer, hip dysplasia, glaucoma, and many behavioral disorders. While it is unlikely that we will ever find a single gene responsible for any of these conditions, it is quite possible that we will find several genes (or markers) that are associated with increased or decreased risk for a specific condition. For example, we might find that the presence of some QTLs are associated with an increased risk of flank sucking in Doberman Pinschers, while others are associated with decreasing the risk, and the aggregate risk can then be characterized for a specific animal. There are already some preliminary findings to support such associations for canine traits such as compulsive disorder⁶⁵ and stereotypes (including size, trainability, herding ability, and even longevity).⁶⁶

DNA testing is also being used to investigate and prosecute dog-fighting cases. For example, the canine Combined DNA Index System (CODIS), maintained by the Veterinary Genetics Laboratory at the University of California, Davis, contains DNA profiles from dogs seized during dog-fighting investigations to help law enforcement agencies establish connections between breeders, trainers, and dog-fighting operators.

Conclusion

It is likely that many of the behavioral problems noted in this book have at least some heritable component. However, even with a genetic predisposition, environmental triggers are likely necessary for full manifestation of the trait. Research is actively underway to find genetic links for behavior disorders, beginning with those that are common or exclusive to specific breeds.⁶⁵

Finding a genetic mutation or marker-based tests for behavior problems such as impulsive aggression in English Springer spaniels or English Cocker spaniels, spinning in bull terriers, tail chasing in German shepherd dogs, or fearfulness in German shorthaired pointers would provide

Box 3.2 Disorders that have a behavioral component for which DNA testing is currently available

Alaskan husky encephalopathy
Centronuclear myopathy
Cerebellar abiotrophy
Cerebellar ataxia
Cobalamin malabsorption
Degenerative myelopathy
Episodic falling
Exercise-induced collapse
Fucosidosis
Globoid cell leukodystrophy
Glycogen storage diseases
GM-1 gangliosidosis
GM-2 gangliosidosis
Greyhound polyneuropathy
Hypothyroidism with goiter
Juvenile epilepsy
Lafora-body disease
L2-hydroxyglutaric aciduria
Malignant hyperthermia
Mucopolysaccharidosis IIIb
Multidrug resistance I (MDRI) mutation
Muscular dystrophy
Musladin–Leuke syndrome
Myasthenia gravis
Narcolepsy
Necrotizing meningoencephalitis
Neonatal encephalopathy
Neuronal ceroid lipofuscinosis
Polyneuropathy
Pyruvate dehydrogenase phosphatase I deficiency
Startle disease (hyperekplexia)

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a means of identifying and removing affected individuals for the breeding population. In addition, knowledge of the precise genetic anomaly presents intriguing possibilities for new and more effective forms of treatment. (See Box 3.2)

References

1. Patronek GJ, Glickman LT, Beck AM, et al. Risk factors for relinquishment of cats to an animal shelter. *J Am Vet Med Assoc* 1996;209(3):582–8.
2. Patronek GJ, Glickman LT, Bec AM, et al. Risk factors for relinquishment of dogs to an animal shelter. *J Am Vet Med Assoc* 1996;209(3):572–81.
3. Ackerman L. The genetic connection: a guide to health problems in purebred dogs. 2nd ed. Lakewood, Colorado: AAHA Press; 2011.
4. Gough A, Thomas A. Breed predisposition to disease in dogs and cats. 2nd ed. Ames, Iowa: Wiley Blackwell; 2010.
5. Bradshaw J. Dog sense: How the new science of dog behavior can make you a better friend to your pet. New York: Basic Books; 2011.
6. Graff E, Gaultier E. Adaptation of adopted cats to their homes – a retrospective study. In: Proceedings of the AVSAB/ACVB Scientific Session. Nashville: 2002. p. 33–36.
7. Stubbs WP, Bloomberg MS, Scruggs SL, et al. Effects of prepubertal gonadectomy on physical and behavioral development in cats. *J Am Vet Med Assoc* 1996;209:1864–71.
8. Spain CV, Scarlett JM, Houpt KA. Long-term risks and benefits of early-age gonadectomy in cats. *J Am Vet Med Assoc* 2004;224: 372–9.
9. Hopkins SG, Schubert TA, Hart BL. Castration of adult male dogs: effects on roaming, aggression, urine marking, and mounting. *J Am Vet Med Assoc* 1976;168:1108–10.
10. Nielsen JC, Eckstein RA, Hart BL. Effects of castration on problem behaviors in male dogs with reference to age and duration of behavior. *J Am Vet Med Assoc* 1997;211:180–2.
11. Hart BL, Barrett RE. Effects of castration on fighting, roaming, and urine spraying in adult male cats. *J Am Vet Med Assoc* 1973;163:290–2.
12. Kustritz MVR. Determining the optimal age for gonadectomy of dogs and cats. *J Am Vet Med Assoc* 2007;231: 1665–75.
13. Nielson J, Eckstein RA, Hart BL. Effects of castration on problem behaviors in male dogs with reference to age and duration of behavior. *J Am Vet Med Assoc* 1997;211:180–2.
14. Mengoli M, Cozzi A, Chiara M, et al. Survey of possible changes in undesirable behavior after neutering in male dogs. In: Proceedings of the 2010 European Behaviour Meeting. Belgium: ESVCE; 2010. p. 189–193.

15. Hart BL, Eckstein RA. The role of gonadal hormones in the occurrence of objectionable behaviors in dogs and cats. *Appl Anim Behav Sci* 1997;52:331–54.
16. Hsu Y, Sun L. Factors associated with aggressive responses in pet dogs. *Appl Anim Behav Sci* 2010;123:108–23.
17. Guy NC, Luescher UA, Dohoo SE, et al. Demographic and aggressive characteristics of dogs in a general veterinary caseload. *Appl Anim Behav Sci* 2001;74:15–28.
18. Messam LLM, Kass PH, Chomel BB, et al. The human–canine environment: a risk factor for non-play bites? *Vet J* 2008;177: 205–15.
19. O'Farrell V, Peachey E. Behavioural effects of ovariectomy on bitches. *J Small Anim Pract* 1990;31:595–8.
20. Kim HH, Yeon SC, Houpt KA, et al. Effects of ovariectomy on reactivity in German Shepherd dogs. *Vet J* 2006;172:154–9.
21. Reisner IR. Dominance-related aggression of English Springer Spaniels: a review of 53 cases. *Appl Anim Behav Sci* 1993;37:83–4.
22. McCarthy MM, McDonald EH, Brooks PJ, et al. An anxiolytic action of oxytocin is enhanced by estrogen in the mouse. *Physiol Behav* 1997;60:1209–15.
23. Hart BL, Cooper L. Factors related to urine spraying and fighting in prepubertally gonadectomized cats. *J Am Vet Med Assoc* 1984;184:1255–8.
24. Takeuchi Y, Ogata N, Houpt JA, et al. Differences in background and outcome of three behavior problems of dogs. *Appl Anim Behav Sci* 2001;70:297–308.
25. Podberscek AL, Serpell JA. The English Cocker Spaniel: preliminary findings on aggressive behaviour. *Appl Anim Behav Sci* 1996;47:75–89.
26. Bennett PC, Rohlf VI. Owner–companion dog interactions; relationships between demographic variables, potentially problematic behaviours, training engagement and shared activities. *Appl Anim Behav Sci* 2007;102:65–84.
27. McCune S. The impact of paternity and early socialisation on the development of cats' behaviour to people and novel objects. *Appl Anim Behav Sci* 1995;45:109–24.
28. Reisner IR, Houpt KA, Erb HN, et al. Friendliness to humans and defensive aggression in cats: the influence of handling and paternity. *Physiol Behav* 1994;55:1119–24.
29. Scarlett JM, Saidla JE, Pollock RVH. Source of acquisition as a risk factor for disease and death in pups. *J Am Vet Med Assoc* 1994;204:1906–13.
30. Voith V, Ingram E, Mitsouris K, et al. Comparison of the adoption agency breed identification and DNA breed identification in dogs. *J Appl Anim Welf Sci* 2009;12:253–62.
31. Wilsson E, Sundgren PE. Behaviour test for eight-week old puppies-heritabilities of tested behaviour traits and its correspondence to later behaviour. *Appl Anim Behav Sci* 1997;58:151–62.
32. Reid PJ, Penny N. Predicting canine behavior through early assessment. In: Overall KL, Mills DS, Heath SE, et al. editors. *Proceedings of the 3rd international congress on veterinary behavioural medicine*. Herts, UK: UFAW; 2001. p. 92–95.
33. Godbout M, Frank D. Persistence of puppy behaviors and signs of anxiety during adulthood. *J Vet Behav* 2011;6:92.
34. Goddard ME, Belharz RG. Early prediction of adult behavior in potential guide dogs. *Appl Anim Behav Sci* 1986;15:247–60.
35. Jones AC, Gosling SD. Temperament and personality in dogs (*Canis familiaris*): A review and evaluation of past research. *Appl Anim Behav Sci* 2005;95:1–53.
36. Godbout M, Frank D. Excessive mouthing in puppies as a predictor of aggressive behavior in adult dogs. *J Vet Behav* 2011;6:93.
37. Cannas S, Frank D, Minero M, et al. Puppy behavior when left home alone: changes during the first few months after adoption. *J Vet Behav* 2010;5:94–100.
38. Godbout M, Palestini C, Beauchamp G, et al. Puppy behavior in the veterinary clinic: a pilot study. *J Vet Behav* 2007;2:126–35.
39. Beaudet R, Chalifoux A, Daillaire A. Predictive value of activity level and behavioral evaluation on future dominance in puppies. *Appl Anim Behav Sci* 1994;40:273–84.
40. Eskeland GE, Mikkelsen C, Rod AM, et al. Is it possible to predict adult canine behaviours from behaviour as puppies? In: *Proceedings of the 2010 European Veterinary Behavior Meeting*. Belgium: ESVCE; 2010. p. 22–27.
41. Netto WJ, Planta DJU. Behavioural testing for aggression in the domestic dog. *Appl Anim Behav Sci* 1997;52:243–63.
42. Weiss E, Greenberg G. Service dog selection tests: Effectiveness for dogs from animal shelters. *Appl Anim Behav Sci* 1997;53:297–308.
43. Van der Borg JAM, Netto WJ, Planta DJU. Behavioral testing of dogs in animal shelters to predict problem behavior. *Appl Anim Behav Sci* 1991;32:237–51.
44. Ledger RA, Baxter MR. The development of a validated test to assess the temperament of dogs in a rescue shelter. In: *Proceedings of the First Annual Conference on Veterinary Behavioural Medicine*. Potters Bar, Great Britain: Universities Federation for Animal Welfare; 1997. p. 87–91.
45. Marder A. Predictability of a shelter dog behavioral assessment test. *J Am Anim Hosp Assoc* 2003;39:511.
46. Bollen KS, Horowitz J. Behavioral evaluation and demographic information in the assessment of aggressiveness in shelter dogs. *Appl Anim Behav Sci* 2008;112:120–35.
47. Martston LC, Bennett PC. Reforging the bond – toward successful adoption. *Appl Anim Behav Sci* 2003;83:227–45.
48. DiGiacomon N, Arluke A, Patronek GJ. Surrendering pets to shelters; the relinquisher's perspective. *Anthrozoos* 1998;11:41–51.
49. Bailey GP, Hetherington JD, Sellors J. Successful rescue dog placement in combination with behavioral counseling. *Waltham Focus* 1998;3:17–8.
50. Penny NJ, Reid PJ. Canine aggression toward children: are simulations valid tools. In: Overall K, Mills DS, Heath SE, et al., editors. *Proceedings of the 3rd International Veterinary Behavioral Meeting*. Vancouver BC, Herts, UK: UFAW; 2001. p. 148–150.
51. Kroll T, Houpt KA, Erb HN. The use of novel stimuli as an indicator of aggression in dogs. *J Am Anim Hosp Assoc* 2004;40:13–9.
52. Moons CPH, Meers L, Stefanini C, et al. Relevance of stimuli used in canine behavioral testing with regard to proximal causality of dog bites. *J Vet Behav* 2010;5:60.
53. Christensen E, Scarlett J, Campagna M, et al. Aggressive behavior in adopted dogs that passed a temperament test. *Appl Anim Behav Sci* 2007;106:85–95.
54. Planta DJU. Testing dogs for aggressive biting behavior. The MAG test (sociable acceptable behavior test) as an alternative for the aggression test. In: Overall K, Mills DS, Heath SE, et al., editors. *Proceedings of the third international congress on veterinary behavioural medicine*. Herts, UK: UFAW; 2001. p. 142–147.
55. Turner D. The human–cat relationship. In: Turner DC, Bateson P, editors. *The domestic cat; the biology of its behavior*. 2nd ed. Cambridge: Cambridge University Press; 2000. p. 193–206.
56. Mertens C, Shar R. Practical aspects of research in cats. In: Turner DC, Bateson P, editors. *The domestic cat; the biology of its behavior*. 2nd ed. Cambridge: Cambridge University Press; 1988. p. 179–90.
57. Walshaw SO. Finding your perfect feline: temperament testing in cats. The 3rd Annual Human-Animal Bond Initiative Conference, College of Nursing, Michigan State University; 2003.
58. Siegford JM, Walshaw SO, Brunner P, et al. Temperament testing of domestic cats: consistency over time and correlation with behavior and baseline cortisol levels. Poster presentation. The 3rd Annual Human-Animal Bond Initiative Conference, College of Nursing, Michigan State University; 2003.
59. Turcsan B, Kubinyi E, Miklosi A. Trainability and boldness traits differ between dog breed clusters based on conventional breed categories and genetic relatedness. *Appl Anim Behav Sci* 2011;132:61–70.

60. Hare B, Tomasello M. Behavioral genetics of dog cognition: Human-like social skills in dogs are heritable and derived. In: Ostrander EA, Giger U, Lindblad-Toh K, editors. *The dog and its genome*. Woodbury, New York: Cold Spring Harbor Laboratory Press; 2006. p. 497–514.
61. Kukekova AV, Acland GM, Oskina IN, et al. The genetics of domesticated behavior in canids: what can dogs and silver foxes tell us about each other? In: Ostrander EA, Giger U, Lindblad-Toh K, editors. *The dog and its genome*. Woodbury, New York: Cold Spring Harbor Laboratory Press; 2006. p. 515–37.
62. Wayne RK, Ostrander EA. Lessons learned from the dog genome. *Trends Genet* 2007;23:557–67.
63. Goddard ME, Beilharz RG. A multivariate analysis of the genetics of fearfulness in potential guide dogs. *Behav Genet* 1985;15:69–80.
64. Nicholas FW. *Introduction to veterinary genetics*. 3rd ed. Ames, Iowa: Wiley-Blackwell; 2010.
65. Dodman NH, Karlsson EK, Moon-Fanelli A, et al. A canine chromosome 7 locus confers compulsive disorder susceptibility. *Mol Psychiatry* 2010;15:8–10.
66. Jones P, Chase K, Martin A, et al. Single-nucleotide-polymorphism-based association mapping of dog stereotypes. *Genetics* 2008;179:1033–44.

Recommended reading

- Ackerman L. *The contented canine: pet parenting for dog owners*. New York: ASJA Press, New York; 2001.
- Ackerman L. *The genetic connection: a guide to health problems in purebred dogs*. 2nd ed. Lakewood, Colorado: AAHA Press; 2011.
- Benjamin CL. *The chosen puppy: how to select and raise a great puppy from an animal shelter*. New York: Howell Book House; 1990.
- Coren S. *Why we love the dogs we do: how to find the dog that matches your personality*. New York: Firefly Books, Tonawanda; 2000.
- Fogel B, White PH. *New dog: choosing wisely and insuring happily ever after*. New York: Firefly Books, Tonawanda; 2008.
- Hart BL, Hart LA. *The perfect puppy*. New York: W. H. Freeman; 1988.
- Kilcommons B, Wilson S. *Paws to consider. Choosing the right dog for you and your family*. New York: Warner Books; 1999.
- Lowell M. *Your purebred kitten – a buyer's guide*. New York: Henry Holt; 1995.
- Morris D. *Dogs: the ultimate dictionary of 1000 breeds*. London: Trafalgar Square; 2008.
- Peterson C. *Please oh please can we get a dog? Parents' guide to dog ownership*. Ames, Iowa: Howell Book House; 2004.
- Sternberg S. *Successful dog adoption*. Ames, Iowa: Howell Book House; 2003.
- Walkowicz C. *Choosing a dog for dummies*. New York: New York, Hungry Minds; 2001.
- Welton M. *Your purebred puppy – a buyer's guide*. 2nd ed. New York: New York, Henry Holt; 2000.

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Working with new puppies and kittens – the team approach

Providing timely behavioral advice to new puppy and kitten owners can help prevent undesirable behaviors, as well as help correct existing problems before they become resistant to change.¹ The first veterinary visit is the time to introduce the family to important concepts about behavior, learning, and training. Don't assume that the family knows how to raise a young pet correctly and effectively. Preventive advice should be offered to all new pet owners, so that they know what is needed and what to expect when raising their pet. Unrealistic owner expectations, insufficient or incorrect counseling and instructive material, lack of training, allowing the pet to roam outdoors, failure to neuter, destructive behavior, and housesoiling have been shown to increase the risk of owner relinquishment.^{2,3} These are issues that need to be discussed with all owners. A list of topics that should be discussed can be found in [Box 4.1](#).

To make matters more expedient during those initial few veterinary visits, it is useful to have a new pet checklist, so that points can be addressed in an orderly manner and important topics don't get missed. Advice to owners can be provided over the course of the puppy and kitten visits ([Form 4.1](#)). As long as the information is properly prioritized, and given at an appropriate time in the pet's development, not all information needs to be provided at once. Preadoption consultations and puppy or kitten classes provide additional opportunities to educate and counsel the new pet owner.

The veterinarian need not be the only person in the practice qualified to provide behavioral advice to family members with new pets. Properly trained staff can be very effective in this role, providing another important facet to the practice's team approach to healthcare. Depending on the hospital set-up and the amount of training the staff have received, a great deal of behavioral education can and should be handled by trained office staff and technicians/nurses. However, it is the veterinarian's responsibility to ensure that

Form 4.1 New puppy or kitten checklist (client form #12, printable version available online)

Owner: _____ Pet's name: _____
 Species: _____ Breed: _____ Date of birth: _____

		Visit 1 Date:	Visit 2 Date:	Visit 3 Date:	Visit 4 Date:
		Age	Age	Age	Age
Client education					
1. Behavior	Socialization				
	Safety/pet-proof/prevent undesirable behavior				
	Confinement training				
	House/litter training				
	Reward-based training – learn to earn				
	Handling and exposure to varied stimuli				
	Provide behavioral outlets – chew/scratch/climb				
	Play biting/nipping				
	Environmental enrichment, toys, play, exercise				
	Puppy/kitten classes				
	Neuter				
2. Healthcare	Vaccines				
	Internal parasites – fecal exam/deworm				
	External parasites				
	Grooming – ears/skin				
	Feeding/nutrition – diet				
	Microchip/licensing				
	Dental home care				
3. General advice	After-hours care				
	Clinic services				
	Insurance; payment options				
Handouts/samples	Puppy/kitten kit – health and behavior care handouts				
	Reading list – web links				
	Clinic brochure/handout				
Products	Pet food/treats				
	Internal/external parasite prevention and control				
	Training products, e.g., head halter				
	Grooming				
	Behavior: chew/play/feeding toys				
	Microchip				
	Books/DVD				
Send/follow-up	Welcome letter/package				
	Magnet/business card				

Box 4.1 Topics that should be discussed with each new pet owner, and that can be a major focus of staff training and involvement in preventive behavior counseling

- Socialization with people and animals of all types
- List of appropriate reading material, websites, and DVDs
- Providing a safe environment by pet-proofing the home and yard
- Supervision, confinement, crate training
- Housetraining, litterbox training
- Handling and gentling
- Enrichment, play, and exercise
- Chewing, scratching, and destructive behaviors
- Reward-based training and shaping desirable behaviors
- Giving pets control to make choices that are acceptable to owners
- Basic grooming needs, nail trimming
- Outdoor safety and pet ID (e.g., microchip)
- Health advice – vaccinations, nutrition, parasites, dental care, neutering, care pathways
- Pet health insurance and other risk management strategies
- Training tools (e.g., head collars, leads, harnesses, toys)

the information the staff provide is correct, up to date, and appropriate. In some hospitals, a practice member with a strong interest and background in behavior might be assigned to coordinate the preventive behavior counseling services as well as the protocol for treating behavioral problems that are presented to the practice.

Proper use of hospital staff will give the veterinarian more time to concentrate on important aspects of behavior and training within the time frame of a typical initial office visit. Veterinary staff can be trained to cover all of the topics listed in [Box 4.1](#). In addition, the use of a variety of personnel, as well as a variety of resources (e.g., handouts, videos, websites, reading lists) may be a more practical way to educate the family. In addition to the handouts available throughout this text (also provided online), two resources for client handouts are those available from the American Animal Hospital Association (AAHA: www.aahanet.org; co-authored by Dr. Hunthausen and Dr. Landsberg) and a compilation of over 100 canine and feline client behavior handouts (www.lifelearn.com; co-authored by Dr. Debra Horwitz and Dr. Landsberg). Another option is to provide useful web links for your clients on your website.

Take the time during initial visits to address and help the family manage problems early. Ask clients about problems at each visit, as they will not always volunteer the information. Unless veterinary staff take a proactive approach, pet owners may not realize that members of your veterinary staff are important resources for behavioral advice, or that early intervention may prevent the development of more serious problems. During the physical exam, also observe the pet for any undesirable behaviors (e.g., fear, aggression, unruliness) and advise on how these might best be handled. If the pet shows evidence that it may become dangerous to family members, it is incumbent upon the veterinarian to inform the owners fully and give them appropriate options. When behavioral advice is given, it is important for the veterinarian or staff to follow up by telephone, e-mail, or in person so that the pet is being managed and improvement is being made.

Since clients may have trouble digesting and remembering all of the medical and behavioral advice, and may be distracted by their new pet during the visit, it can be very helpful to provide handout materials and pamphlets that can be taken home. Book and video suggestions may also be appreciated. Most pet food companies provide “puppy packs” or “kitten kits” that contain free samples and literature, which can be supplemented with your own customized forms, including the ones found in this book and from our website or the Lifelearn or AAHA handouts mentioned above.

Socialization and habituation

Socialization has been discussed in [Chapter 2](#) but is mentioned again here as it is one of the most important concepts for the veterinarian to introduce to the family with a new pet.⁴ Puppies and kittens need to be handled frequently and have positive contact with a variety of people and other animals, objects, and environments early in their lives in order to become normal, friendly, confident adults. Socialization is the process by which pets develop a relationship with animals of their own species and other species. Socialization is a special learning process whereby a pet learns to accept the close proximity of others in its world. The most critical period for socialization (sensitive period) in puppies starts at 2.5–3 weeks and declines at 12 weeks of age, while the most receptive period for kittens is from 2 to 7 weeks of age.^{5–7} During these periods, puppies and kittens show little fear of strangers and novel objects and will generally explore and play with everyone and everything they meet. At this time attachments will be made with their own and other species most rapidly and without the need for counterconditioning.⁸ Pets that develop social relationships during these periods are often capable of maintaining these relationships for life. The sensitive period is also a time for pets to form attachments to places (or localization) in which potential environmental fears can also be reduced by exposure.^{9,10} Pets that are regularly exposed to a variety of people, pets, and complexity in the form of novel objects, experiences, toys, textures, sounds, and regular handling (both sexes, various ages and appearances) are likely to be friendly and form stable attachments to both the “living and nonliving parts of their environments.”⁹ Social deprivation may prevent the establishment of normal socialization, and can affect learning, fear responses, sexual behavior, and social preferences.^{11–16} Although these are sensitive stages for primary socialization, continued socialization is also necessary for social relationships to be maintained to prevent regression. For appropriate social development, the breeder should begin handling and provide careful environmental enrichment shortly after birth.^{17,18} Puppies and kittens that do not receive sufficient auditory, tactile, and visual stimuli may be slower learners, less social, and more fearful than properly stimulated and socialized littermates. Adequately stimulated puppies and kittens have superior coordination, higher sociability toward people, and better problem-solving scores, and are less fearful in novel situations.¹⁹ In fact, early handling and mild stress may produce a change in the pituitary-adrenocortical system that helps the pet to cope better with stressful situations later in life.²⁰ Breeders who isolate puppies or kittens and deprive them of sufficient early

handling may produce pets that are overly fearful and lack desirable social behavior.

Another critical factor in the early development of dogs and cats is the role of the mother. The behavior of the bitch and queen also can affect behavior. Bitches with good maternal behavior produce offspring that are more confident and less easily stressed while those that are anxious or ambivalent are likely to produce clingier, overdependent infants.¹⁰ In studies of cats and rodents, mothers that were undernourished produced offspring with poorer learning ability and altered social relationships with other cats, and were more fearful and aggressive.²¹ Maternal deprivation has also been found to contribute to aggressiveness, heightened fearfulness, anxiety, social abnormalities, and the development of stereotypic behaviors.²² Dogs and cats that have been deprived of maternal and peer interactions form poor social bonds later in life since this is a time in which future social partners are determined and the species to which it belongs is defined.¹⁰ For example, if a puppy or kitten is removed from the litter at birth and hand-reared, it may be unable to mate or care for its own litter later in life, and may have increased aggressiveness, anxiety, and social abnormalities with both humans and its own species.²²

In addition, the socialization period not only determines the pet's future social partners but also effectively helps it adapt to the species to which it belongs.¹⁰ The socialization period is particularly important for intraspecies identification and appropriate development of intraspecific communication. The animal also learns to develop what is and is not acceptable behavior with its mother and other members of its species. During this time dominant and subordinate signaling is refined which helps reduce the number and seriousness of play fights and helps the dog learn to resolve conflicts without aggression.^{5,9} With insufficient early social interaction with conspecifics such as with solely hand-reared pets, dogs and cats may become overly rambunctious and less inhibited in their social interactions with family members.

Puppies or kittens removed from the litter at 4 weeks of age or younger may not be able to relate appropriately to members of their own species at a later age. Therefore, it is generally recommended that puppies remain with their mother and littermates until approximately 7 weeks of age, so they can develop communication skills and social skills and have an opportunity to play and interact with other dogs. It is equally important for kittens to develop and maintain proper social relationships with other cats. However, since the most sensitive period for socialization in cats begins to wane as early as 7 weeks of age, social contact with people and other species must begin before this time. In order to accomplish good intraspecific socialization skills, continued socialization with other members of its species should continue throughout the socialization period, even after the pet moves into the new home. Having more than one dog or cat in the home, visiting with the pets of friends and relatives (if healthy, social and vaccines are up to date), avoiding areas where viruses and parasites might be picked up, along with puppy or kitten classes are often the best ways to develop and maintain good social skills with conspecifics (Figure 4.1).

By 7 weeks of age, puppies are least inhibited and therefore best able to adapt to new experiences. This is also just prior to the start of the primary fear period. Although continued



Figure 4.1 Puppy classes are an excellent way to encourage proper socialization and early learning. Offering puppy classes in the veterinary hospital promotes a positive association with the veterinary visit for the puppy, the family, and the veterinary hospital staff. In this photo the veterinary technician Shannon LaCommare LVT teaches a puppy class at Madison Veterinary Hospital in Madison Heights, Michigan. (Courtesy of Theresa DePorter.)

socialization with other dogs is important, the focus of socialization should now be shifted toward as many new people and situations as possible. Dogs that have had no social contact with people by 14 weeks of age are unlikely to make adequate family pets and tend to behave more like their wild counterparts.

Every attempt should be made to introduce the puppy to people, animals, and environments that it might be likely to encounter in adulthood. When reviewing the examples, be certain to have the family concentrate on stimuli that differ from those in the daily household (Box 4.2). An excellent way for owners to socialize their puppies to new people is to use the concept of socialization biscuits (Appendix C, form C.2, client handout #3, printable version available online). The owner should take the puppy into novel situations armed with a container of small treats. The puppy should be encouraged to approach people it meets along the way (e.g., children, joggers, cyclists, postal workers). When the puppy responds appropriately without any apprehension, the owner gives the stranger a biscuit treat to give to the puppy. A treat, toys, and some play are usually all that is required to socialize most puppies (and most kittens) (Figure 4.2). Note that if the puppy greets properly (i.e., sitting, walking by, not jumping up), the reward can be given without the need for the verbal cue. The same can be done with the staff in the veterinary clinic and visitors coming to the home. This is a time when not only social relationships need to be established, but also when the puppy is most open to becoming comfortable with new stimuli and to making attachments to new places. During this period, strong fear-eliciting situations and stimuli must be avoided. However, the owner should also be told that even properly socialized puppies may exhibit protective and warning behaviors such as barking.

Overall, the factors for optimum socialization and prevention of fear and avoidance include: (1) early gentle handling by the breeder; (2) maternal reared in a domestic environment with exposure to humans and varied stimuli;

Box 4.2 Stimuli for socialization and habituation of puppies and kittens. Any exposure that does not end in a positive outcome should be avoided, and reintroduced in a more graded manner (desensitization) and with a positive outcome such as treats or play (counterconditioning)

Animate stimuli – expose to sights, sounds, smell, movement, positive handling of the following

Variety of people (children/babies, teenagers, adults, males/females, elderly)

Men with beards

People with different hair lengths, color, styles

People with different complexions, color

People wearing uniforms, backpacks, hats, headgear, glasses

Physically or mentally challenged (wheelchairs, walkers, canes,

altered mobility)

People and associated activity/noise (e.g., playing sports, skateboards, roller blades, bicycles)

Veterinarians/veterinary staff

Animals of same and other species

Inanimate stimuli – expose to sights, sounds, smell, and contact with the following

Household stimuli

Unfamiliar locations – veterinary clinic, visit to family members or neighbors

Cars, trucks, bikes (pedal and motor), trains

Roadway, sidewalk, pavement, footpath

Parks

Elevators (lifts)

Crate/kennel

Vacuum cleaners, microwaves

Tastes

Stimuli that are novel/unique to the new environment (e.g., planes, trains, hot-air balloons)

Box 4.3 Steps for optimum social development of puppies and kittens (Available as Client Handout 29)

1. Choose breeding animals that exhibit desirable social behavior
2. Select pets that have been raised in a domestic (home) environment by their mother
3. Choose pets that have had handling and early stimulation (rather than isolation and avoidance)
4. Provide opportunities for socialization with humans and other species prior to the end of the socialization period
 - Optimum age for canine pet adoption may be 7–8 weeks (less inhibited, before the fear period)
 - Optimum age for feline pet adoption is prior to the end of primary socialization at 7–9 weeks
5. Habituate to as many stimuli and environments as practical during the early months of life
6. Consider all people, animals, stimuli, and locations to which the pet may be exposed at a later age but are not presently in the environment and seek out exposure. Be particularly diligent about exposure to children, the elderly, or people who are physically or behaviorally different from family members
7. Avoid excessively fearful situations and exposures – monitor the pet for any emerging signs of fear and keep all meetings and greetings positive. Use toys or treats for a positive association
8. Continue exposure to conspecifics into adulthood to maintain healthy social relationships
9. Consider puppy and kitten classes for early training and socialization in a controlled environment

experiences. (Box 4.3). DVDs and CDs can be obtained for sound exposure and desensitization. Puppies with a nondomestic (kennel-reared with minimal human interaction) maternal environment and insufficient socialization and localization are at increased risk for developing avoidance behavior near unfamiliar people, dogs, noises, and places, and fear-related aggression.

Cats that have had no social contact with people by 7–9 weeks of age may not be able to develop a healthy social relationship with humans. Therefore, ideally a kitten should be either removed from the litter and taken into its new home by 7 weeks of age, or the potential owner must ensure that the kitten has had adequate interactions and handling by people and other potentially fear-evoking stimuli before it is obtained. Once obtained, the family should focus on socialization and habituation to people and pets both in the home as well as those that differ from the present household and family (Figure 4.3). Wherever possible, provide treats when meeting or greeting new people or pets, so that a positive association can be made. A client handout on kitten socialization can be a useful tool (see Appendix C, form C.3, client handout #18, printable version available online). Owners should attempt to maintain their kitten's social skills with other cats by having more than one cat in the home, visiting friends with healthy, vaccinated, sociable cats, or by attending kitten kindergarten for a practical opportunity for varied exposure (discussed below).



Figure 4.2 Child greeting and counterconditioning a new kitten using canned food from a spoon. (Courtesy of Theresa DePorter.)

(3) adoption into the new home during the socialization period; (4) a variety of positive social experiences and new environments throughout the socialization period; (5) continued social interactions and stimulus exposure through the juvenile period, and (6) avoidance of negative social

Puppy classes and kitty kindergarten

One way to achieve socialization to a variety of people and other pets is to take puppies to puppy classes and kittens to



Figure 4.3 Switch meets Grace: early socialization of a kitten to other animals such as dogs and counterconditioning with food can reduce or prevent fear.

kitty kindergarten (Figures 4.1, 4.5, 4.6 and Boxes 4.4 and 4.5).^{23,24} For maximum benefit for the veterinary hospital these classes should be run by suitably trained staff members in the hospital facility. The goals of these classes are to provide continued socialization to a variety of people and pets, and to educate owners in the training and management of pets and prevention of behavior problems.

Topics should include:

- routine healthcare
- training for good manners (at home and when out)
- socialization
- positive handling (including grooming and veterinary procedures)
- normal behavior and providing for the pet's behavior needs
- how animals learn and shaping desirable behavior
- setting up the household for success
- house/litter training
- destructive behavior
- play biting and unruly behavior
- unruly behavior.

See the puppy class training outline (Box 4.4) and the kitten kindergarten outline (Box 4.5) for specifics.

These classes help emphasize your clinic's interest and expertise in providing behavioral advice, and expand the services you offer. The class should have a minimum of three to four pets to provide opportunities for socialization, with a maximum of six. Ideally there are at least two instructors so that there is one instructor for each three puppies or kittens. During some sessions, puppies and kittens should have structured play. In Dr Seksel's Puppy Preschool she prefers to limit play to two puppies off leash at a time (Figure 4.4). Structured and supervised play with conspecifics (especially in dogs that have no other dogs in their home environment) provides an opportunity to develop socially acceptable behaviors and refine communication skills between members of the species. Social interaction with people and other pets as well as some demonstration and guidance on reward-based training techniques should also be covered. Any emerging problems should be identified and appropriate management and solutions discussed. Puppies in these classes are better trained and have earlier and effective behavior problem intervention compared with puppies that do not



Figure 4.4 Play can help puppies develop their social and communication skills.

attend puppy classes.²⁴ In addition, puppies attending well-designed puppy classes had higher rates of retention as adults and were less likely to show undesirable behavior to unfamiliar dogs.^{25,26} In one study, dogs wearing dog-appeasing pheromone (Adaptil) collars were less fearful and anxious, had more positive interactions, and in follow-up surveys for 1 year were consistently more social and faster to adapt to new situations than puppies wearing placebo collars.²⁷

Veterinary hospitals that do not have sufficient space to run these classes might consider having a monthly 1–2-hour puppy or kitten socialization “party” in the reception area (Figure 4.6). During this get together (open house), families can bring their new pets, meet the staff, take a tour of the hospital, and get additional information on behavior, nutrition, grooming, and dental care, and the pets may have some social time with other people and pets. A few refreshments for owners and pets and some free samples might also be a good way to encourage attendance. If your clinic recommends a local trainer for puppy or kitten classes, you could have the trainer attend the open house to give a brief demonstration, supervise some socialization activities, and sign up pets for the classes.

One major concern of some veterinarians and pet owners is the risk of disease to puppies and kittens that have not yet finished their vaccination series. However, in order for socialization classes to be optimally effective, they should begin well within the primary socialization period (i.e., before 12 weeks of age). Therefore the risk of disease must be weighed against the potential benefits of early socialization and training. If puppies and kittens have been examined and found to be in good health and free of parasites, have been vaccinated at least 14 days earlier, and continue to receive their vaccinations in a timely manner, then bringing them into an indoor training environment with other pets their own age should be a minimum risk compared with the benefits that might be achieved. In fact, this type of well-screened and supervised environment might be less risky than a walk along the street, or a trip to other areas frequented by pets. Risk can be further reduced by ensuring that the pet has been in the new home for a reasonable length of time (e.g., beyond the incubation period for common infectious diseases) before beginning classes. Training could begin later in areas where infectious diseases with high morbidity or mortality are endemic (enzootic) or epidemic (epizootic). A

Box 4.4 Guidelines for puppy classes (client form #14, printable version available online)**Puppy Preschool outline**

The following guidelines for Puppy Preschool have been developed predominantly from material provided by Dr. Kersti Seksel and other puppy class structures have been effectively utilized.

Puppy Preschool classes help your client's puppies develop social skills, be reinforced for acceptable behavior, and learn verbal cues in a safe and controlled environment.

There are many topics that could be covered but realistically they cannot all be taught in 4 or 5 hours of attending Puppy Preschool classes.

It is advisable that just 4–6 (maximum) topics are covered in each class. This will prevent running over time and puppies becoming too tired, and give a greater opportunity for owners to absorb and learn what they are being told.

Ideally the first class is run without puppies being present so that owners can focus on the topics covered rather than be distracted by the puppies. The following four classes can then cover other topics and give practical demonstrations. Each week the class generally involves some training, guidance on canine health issues, and discussion of normal puppy behaviors, and how to prevent these behaviors becoming problems in the home. For more details, see Figure 4.6 or visit www.hillspuppreschool.com.au.

Week 1*	Week 2*	Week 3*	Week 4*
Introductions and class rules	Come on cue	Drop on cue	Stay on cue
Training guidelines and use of rewards	Look on cue	Walking on a loose lead	Crate training
Mat training and settling techniques	Vaccinations	Fleas, ticks, heartworms	Oral care
Sit on cue	Handling techniques	Neutering	Review
House (toilet) training	Grooming	Destructive, unruly, barking	Graduation
Exercise Supervised play (mental and physical) Meeting puppy's needs	Nutrition	Supervised play	
		Review sit, look, come on cue	

The Puppy Preschool program is specifically designed for puppies between the ages of 8 and 16 weeks. It helps develop their social skills, reinforces acceptable behaviors, and teaches them verbal and visual cues. Additionally puppy owners learn about canines, their behavior, and how to manage them. Classes should be run in a safe, secure, and controlled environment for all those involved.

Age requirements

Puppy Preschool is designed for dogs between the ages of 8 and 16 weeks. Although the socialization period of dogs starts at around 3

weeks of age, puppies less than 8 weeks of age should still be with their mother and littermates. It is not recommended having puppies older than 14 weeks commence Puppy Preschool classes as they have reached the end of their primary socialization period. When beginning the program puppies should ideally be between 8 and 12 weeks old. Older puppies should attend juvenile classes which can also be run at the veterinary hospital or by the local trainer. [Authors' note: Exceptions can sometimes be made for slightly older, small-breed dogs with a friendly, nonreactive temperament.]

Although a small breed such as a Jack (Parson) Russell terrier at 18 weeks may be similar in size to a 10-week-old beagle, there can be problems if they are in the same class. It may seem harmless, but the 18-week-old Jack Russell terrier may be more physically and psychologically advanced than the 10-week-old beagle and so will interact quite differently.

Size requirements

Puppies of different breeds should be in the same class. Conducting separate small-breed and large-breed classes sets unrealistic expectations for the puppies as in the real world they will interact with other dogs that may be bigger or smaller than they are. However, when play is incorporated into the session, puppies of similar sizes should be chosen to interact.

Number of puppies

Puppy Preschool classes should ideally have no more than six puppies in each class. Having more puppies in a class can make it more difficult to manage and can lead to a significant increase in vocalization which is distracting and disruptive and can interfere with learning. Adaptil collars or a diffuser in puppy classes can reduce fear and reactivity and may enhance the socialization process.^{1,2}

Number of people

While the whole family should be encouraged to attend, it is not desirable to have children under 5 years of age participate. If they do, each should be accompanied by two adults, one for the child and one for the puppy. For example, a class of 6 puppies with 2 adults and 1 child per puppy makes up a class size of 18 people plus 6 puppies.

Number of instructors

It is recommended that there are two instructors per Puppy Preschool class for several reasons. One instructor can continue with the classes while the other might be assisting a particular puppy. It is also an ideal way for new people to gain Puppy Preschool instructing experience and it is easier to manage the class attendees.

Space requirements

The space available will help determine the number of puppies you can realistically have attend. Every person should be able to sit comfortably on a chair and the puppies should all have a mat to lie on.

¹Graham D, Bailey G, Mills DS. The effect of temporary exposure to synthetic dog appeasing pheromone (DAP) on levels of arousal in puppy classes. J Vet Behav 2007;2:90.

²Denenberg S, Landsberg GM. Effect of dog-appeasing pheromones on anxiety and fear in puppies during training its effects on long term socialization. J Am Vet Med Assoc 2008;233:1874–82.

*Note that some puppy class instructors choose to include a) structured and guided play sessions at each class and b) positive (rewarded) exposure to different stimuli at each class such as i) people wearing work uniforms or costumes, ii) movement and noises ranging from bikes and skateboards to wheelchairs and iii) different surfaces textures to walk over (rubber mats, grating) or objects to walk through (e.g. agility structures)

recent study found no association of parvovirus with attendance at puppy classes.²⁸

Environmental enrichment

When one considers the normal behavioral development of puppies and kittens and the stress placed upon them when adopted into a new home, there are challenges for the

family in helping with the transition and for the pet in adapting to the new household. The new home should provide a predictable routine; appropriate outlets for each of the pet's needs at each stage of development; secure and comfortable housing; and predictable consequences that focus on rewarding what is desirable and preventing what is undesirable. Reinforcement-based training can quickly enhance the bond between pet and owner, while improving communication and shaping those behaviors that are

Box 4.5 Guidelines for kitten classes (client form #11, printable version available online)**Kitten class outline**

As with young puppies, early socialization, training, and owner education are important in helping prevent behavior problems and decreasing the chances of future relinquishment. Although fewer people run kitten socialization classes, these classes are just as valuable for kittens and their owners and they are a great public relations tool for the practice.

Ideally the first class is run without kittens attending, as it allows owners to focus on the topics being covered. It is primarily intended to explain kitten care, discuss normal cat behavior, and help the owners design an environment that meets all of the kitten's needs while preventing the development of behavior problems. Handouts and a reading list should be distributed so that owners can review the information at home.

Because of the shorter period of socialization of cats this may not be possible unless the first class is run on a Monday, for example, and the second class conducted on Tuesday and a third class later the same week.

Class 1 (no kittens)	Class 2 (with kitten)	Class 3 (with kitten)
Introduction and class rules	Reward train	Lie down on cue
Training with rewards	Look/sit on cue	Walk on harness and lead
Settling techniques	Stay on cue	Foraging toys and predatory/chase toys
Litter box care	Gentle handling techniques	Teaching tricks
Meeting kittens' needs	Grooming, nail trim, oral care	Neutering
Mental/physical enrich, explore, scratch, climb, perch	Vaccinations	Discuss problems
Confinement/safety	Socialize	Review
Internal/external parasites	Toy exploration	Graduation
Nutrition		
Come on cue		

Age requirements

Kittens should be between 8 and 13 weeks of age, free from external parasites and any evidence of potentially infectious diseases, and have at least one set of vaccinations before entry into the program. It is not recommended having kittens older than 13 weeks commence classes but owners of older cats can be encouraged to attend.

Number of kittens

Kitten Kindy classes should not have more than 6 kittens in each class.

Number of people

The whole family is encouraged to attend. Each child under the age of 5 should be accompanied by an adult.

Number of instructors

It is recommended that there are two instructors per Kitten Kindy class. One instructor can continue with the classes while the other might be assisting a particular kitten and it allows new people to gain experience. Although classes are easier to manage with two, as the kittens do not interact as much, these classes are slightly easier to manage alone than puppy classes.

Space requirements

The space available will help determine the number of kittens that can realistically be accommodated. Every person should be able to sit comfortably on a chair. The room also needs to be kitten-proofed so that kittens cannot escape or get into places that are not easily accessible for people.

References and further reading

Seksel K, Dale S. Kitten Socialization and Training classes. In: Little S, editor. *The Cat, Clinical Medicine and Management*. Elsevier; 2011.
 Seksel K. *Training your cat*. Victoria, Australia: Hyland House Publishing; 2001.
 Seksel K. Preventing Behavior Problems in Puppies and Kittens. *Vet Clin N Am* 2008;38:971–82.



Figure 4.5 Two kittens playing with an exploration toy at kitty kindergarten. (Courtesy of Kersti Seksel.)



Figure 4.6 A puppy party can combine an open house with an entertaining and informative session about puppy socialization, play, and training. The trainer demonstrates the power of positive reinforcement at a puppy party at the Doncaster Animal Clinic.

Box 4.6 Suggestions for environmental enrichment for dogs (see Client Handout 30)**Sensory enrichment**

These might include a radio, television, or DVD, toys that squeak, and foraging devices.

Feeding

Small stashes of food hidden around the home in small containers can stimulate hunting and feeding behavior. Fresh fruit and vegetables can be provided for the pet to gnaw on. Meat, canned food, or other flavorings can be added to water, and then frozen in a plastic container. Cubes of meat or pieces of shrimp (prawns) can be frozen in cups of water. Treats or kibble can be placed in plastic water or soda (soft drink) bottles for the pet to knock around and empty. Food can be scattered on the floor or deck or in the grass in the yard to make the dog search for each piece. A food dispenser that uses a timer to dispense food at intervals can be used to stimulate the dog throughout the day. In fact, instead of feeding from dishes, dogs can work for some or all of their daily food. Pieces of food can be tossed down the hall, up the stairs, in the kennel or around the yard for the dog to chase.

Manipulative toys and objects

A wide variety of toys are available from commercial companies. Many dog chew toys are made of durable rubber and may have grooves or holes where chew products, food, or treats can be stuffed (Figure 4.8). Safety and characteristics of toys that are interesting to the individual pet will determine which toys are appropriate. Toys should not be so small or fragile that they can be chewed and swallowed, nor so hard that a tooth could be broken. There are many toys available that are designed to be stuffed, coated, or filled with food, treats, or chews and require some form of manipulation to dispense the food. Freezing the food in the toys will increase the time the pet spends with it. Other toys are designed to be moved around so that dry food or treats will fall from openings in the toys (Figure 4.9). Rabbit, quail, and other “wildlife scents” (available from sporting goods stores) can be smeared on toys to increase their appeal; however, care should be taken with some dogs that it does not increase predatory instincts. Sturdy, fleece toys that can be grabbed and shaken are very appealing to some dogs and can satisfy a need

for predatory play. Squeak toys produce a high-pitched, prey-like noise that appeals to many dogs. Periodically rotating toys in and out of the pet’s environment will recharge the novelty of the toys.

Consider feeding most of the daily food from toys. Articles of clothing and household items (such as shoes, old towels, and blankets) should not be used for play as some pets will generalize their chewing to possessions that the owner does not want damaged. Other family possessions that might appeal to the puppy must be kept out of reach.

Play

Retrieving, tug of war, flying discs, or playing games with soccer, hockey, or football toys are enjoyable and stimulating ways for the owner and pet to interact.

Environmental

A doggie door allows the pet to get out during the day. A small wading pool (if supervised by family) can be provided for the dog to splash in. Toys can be buried in a sandbox or a sand-filled digging pit for the dog to dig out. Large plywood boxes and tunnels can be placed in the yard for the dog to crawl through and on top of. A tire or inner tube can be attached to a tree limb for the dog to grab and tug or chew. New environments should periodically be visited with the dog to explore. When opportunities to play and exercise with the family are limited the pet can be taken to day care.

Social

Provide another pet (same or another species) for social interaction and exercise. Visit the pet during lunch breaks. Hire a dog walker. Ask friends and family members to stop by during the day to interact with pet.

Training

There are all types of training that families can do with their pets, many of which they may not be aware. Obedience, flyball, scent, Frisbee, agility, tracking, lure coursing, earthdog trials, weight pulling, herding, musical freestyle dancing, trick and other types of training are activities the pet might enjoy but care should be taken so that the dog is not overstimulated or anxious during classes.

desirable. Similarly, cats need regular interactions with the family. Cats can be trained and learn tricks using treats and play toys as rewards.

Punishment can cause fear and anxiety, adversely affect the bond, and at best only teaches the pet who, what, and when to avoid rather than training the pet what is desirable. Focusing on the prevention of problems and setting up an environment in which the pet can succeed improves the welfare of the pet and the pet–family bond, and reduces those behavioral problems that can damage or break the bond.^{29–31}

It is important for the family to understand that they must provide for all of the pet’s needs. Besides nutrition, health, and shelter, dogs and cats have very important social, physical, and mental stimulation requirements. If these are not met in dogs, a variety of undesirable behaviors may develop, including unruliness, hyperactivity, undesirable play behavior, unwanted exploratory behavior, destructiveness, conflict-induced behaviors such as self-trauma, nocturnal activity, and attention-seeking behaviors. In cats, the consequences might include elimination, scratching, aggression, anxiety,

vocalization, and excessive activity.³² Since most pets are considered as family members, it is also important to realize that not comprehending and meeting a pet’s true needs is also likely to produce a less than satisfactory family–pet relationship.³³ Accordingly, some of the goals of environmental enrichment include increasing behavioral diversity, reducing the frequency of unacceptable behaviors, increasing the range or number of typical behavior patterns, increasing positive utilization of the environment, and increasing the ability to cope with challenges in a more productive and healthy manner.³⁴ See Boxes 4.6 and 4.7 for guidelines for environmental enrichment for dogs and cats.

All animals require an environment that allows them to be physically stimulated (exercised) as well as mentally stimulated (cognitively and/or emotionally motivated/exercised). They need to be provided with complex, stimulating environments that allow them to carry out activities that give them choices, both physically and psychologically, to the extent with which they can cope. Pets with anxiety issues need the enrichment to be appropriate to their needs as too much can exacerbate their issues, as can too little. Confined animals

Box 4.7 Suggestions for environmental enrichment for cats (see Client Handout 31)

An enriched environment for a cat offers a wealth of resources spread throughout the home that offer outlets for species-typical behaviors. Resources can include watering and feeding sites, elimination sites, scratching sites, resting/perching sites, toys and play activities.

Sensory enrichment

These might include a radio, television, a DVD of animals, toys that squeak or are enhanced with catnip if the cat is responsive, as well as foraging devices. When choosing DVDs for cats, ensure that the subjects are prey or socially amicable cats to avoid potential redirected aggression.

Feeding

Toys are available that can be filled with canned food and cheese for the pet to empty. Freezing the food in the toys will increase the time the pet spends with it. Other toys are designed to be moved around so that dry food or treats will fall from openings in the toys, such as the pipolino, FunKitty, or Kitty Kong toys (Figure 4.10).

Food can be delivered in a variety of creative ways to simulate hunting behavior. Small stashes of food can be hidden around the home to provide a food scavenger hunt for the pet. The family can have food-tossing sessions during which a piece of kibble or treat is tossed down the hall, up the stairs, or into a kennel for the cat to chase. Treats or kibble can be placed in plastic water bottles, cardboard milk containers, or soda bottles from which the pet can rattle out treats. A food dispenser that uses a timer to dispense food at intervals can be used to stimulate the cat throughout the day. Kitty drinking fountains can provide an interesting addition to the environment for some cats.

Manipulative toys and objects

Most young cats seem to enjoy stuffed toys that can be attacked. Adding catnip to the toy may increase the cat's interest. Some cats may be particularly interested in toys that must be rolled about or moved to release catnip. Ping pong balls, walnuts, and other toys can be provided for the cat to pounce on. A few small holes can be cut in a plastic water bottle containing some treats. The cat will roll it around to get the treats to fall through the holes. Feather or rubber toys on flexible wires that twist about are other good choices. Some cats find certain bird and dog toys appealing. Raw hide strips and other dog food chews can be used to keep cats busy. Rotating the availability of toys may increase their novelty and interest.

Play

Toys and games should address the cat's innate behaviors. Cat toys that dangle from a door handle or scratching post and those mounted on springs can provide good outlets for play. Toys suspended from strings and animated by a fan and battery-operated toys will entertain most cats. Mobile-like toys that sway and bounce when swatted are good choices for some cats (Figure 4.8). String and thread should be kept away from cats between play sessions, and all toys should be large and sturdy enough that they cannot be broken or ingested. Interactive play, however, can be the best outlet for most cats' needs. Hands, fingers, and toes should never be used to encourage play.

Environmental

The cat's environment should be set to satisfy each cat's specific needs. Multilevel resting areas can be particularly important in multicat households. "Cat shelves" can be mounted on walls that allow cats to explore multiple levels in the home, and perches can be set up at windowsills, on bookcase shelves and appliances. Kitty condos also provide resting, play, and exploration areas. Sunny locations are good choices for perching areas. Bird and squirrel feeders can be set up for the cat to watch, provided it does not increase arousal or frustration. Cardboard boxes and paper bags can be placed around the home to encourage exploratory behavior. Catnip caches can be hidden around the home for the cat to seek out and enjoy. Some cats will be entertained by videos of wildlife or fish in an aquarium. For cats that enjoy chewing on fresh greens, gardens of sprouted wheatgrass or catnip can be provided. Objects for the cat to scratch should be provided, including rope, carpet, and sisal-covered posts, fireplace logs, and commercial cardboard scratching pads. Some cats may like vertical areas to scratch, while others may prefer horizontal objects. While it is safer to keep the pet indoors, some cats can be confined to the yard using special types of cat fencing.

Social

Provide another pet – same or another species – for social interaction. People interactions are also important.

Training

Using food lure reward training, most cats can be trained to sit and come on cue as well as a wide variety of tricks.

are often understimulated because choices are not available or choices are made for them that do not meet their needs.

Dogs

Dogs are a social species that require regular interaction with others, be it with other dogs or with their families. It is not behaviorally healthy for dogs to live alone for extended periods of time without social interaction or alternative forms of stimulation. In addition, since dogs inherently hunt or scavenge for food, there is minimal challenge, stimulation, or effort required when fed once or twice a day (or even free choice) from a food bowl. It is important for dogs to live in an environment that is interesting, complex, and stimulating, so it is not surprising that they may engage in behaviors that help to fill the void, or develop displacement behaviors when frustrated or prevented from exhibiting their

normal repertoire of behaviors. Dogs benefit greatly from training, physical exercise, agility, or working activities such as herding or retrieving trials, and from play with the family, other dogs, and toys.

It is important to provide a supply of safe and interesting toys the dog can manipulate when alone. Oral exploration in the form of chewing appears to be particularly appealing to some dogs, providing both physical and mental activity and stimulation. When selecting chew and feeding toys, begin with a variety of toys to determine which type the dog prefers. The toys should be rotated in and out every few days to keep the dog motivated. When the dog is chewing appropriate toys, rewards of affection or small pieces of food should be given. Toys made of durable rubber, beef hide chews, and dental treats are generally good options. Some toys are designed for biscuits or food spread to be stuffed into the openings. This will increase the dog's level of

interest in the toys and extend the time it stays occupied. Toys can be stuffed with food and then frozen. Other toys that might capture a dog's interest are foraging devices that require manipulation to release food, treats, or kibble. In fact, by feeding most of the dog's food and treats out of toys instead of a food bowl (with the balance saved for reward training), feeding times can be longer, more challenging, and more enriching.

Cats

The family should consider the cat's normal behavioral repertoire and include outlets for predation and chase, social interactions, eating multiple small meals, object play and exploration, scratching, climbing and comfortable places for perching and resting; problems might arise if these are not available. While some cultures and some home environments are more likely to offer cats the opportunity to spend time outdoors to engage in some of these daily activities, the challenge is much greater for owners who live in urban areas and high-rise apartments, who house their cats entirely indoors.³⁵ However, even in these environments, it might be possible to design an outdoor enclosure or take the cat for short walks with a body harness and leash to provide outdoor enrichment. Inside the home, shelves on which to climb, cubbies, cardboard boxes, tunnels, and paper bags that provide hiding and resting places enhance and increase the size of the cat's environment, as well as improve the chances that multiple cats can successfully share the home. Cats also need access to suitable surfaces to scratch for claw maintenance and to express normal marking behavior. An indoor garden box with grass, catnip, or catmint for cats to nibble and roll in can provide enjoyment for many cats.

Object play in the form of games of pounce and chase appears to resemble predatory patterns closely. Hunger increases biting attacks and hunting behavior and play may become more intense with increasing hunger.^{36–38} Therefore, as meal times approach the cat might be in most need of play. On the other hand since feeding may decrease the frequency or intensity of hunting, feeding multiple small meals a day might reduce the intensity of play.³⁹

Cats tend to hunt smaller, more vulnerable prey such as mice over larger prey such as rats, although hunger increases the probability and speed of kill and decreases the inhibition to attack the larger prey.³⁸ Toys that are most similar to normal prey in size, movement, and texture are most likely to motivate the cat to stalk, chase, and pounce.³⁶ Safety must also be considered when choosing a suitable toy. Toys (e.g., cardboard, plastic, leather, feathers) attached to ropes, strings, or wands can be kept away from the body and moved in such a way as to encourage, stalking, chasing, pouncing, and biting (Figure 4.7). If the cat contacts human body parts, play should immediately cease. In one study, a used hair band was the most interesting of a group of toys, followed by a small plastic toy stuffed with food. Each was attached to a length of string to initiate the chase sequence.⁴⁰ Stuffing food or catnip in a toy may encourage chase and a reward offered when captured. Toys should be sufficiently small and light so that the cats can carry them with their mouths, and easily remove any food stuffed inside.

Studies have found that cats will rapidly habituate to a toy, but this does not mean that they have lost their interest in



Figure 4.7 A cat toy serves as an outlet for play and a substitute for mousing.

play itself.^{40,41} In fact, in one study, even after cat's interest in a toy, for the next 5 minutes play interest is heightened (disinhibition) and may not wane for 25 to 40 minutes. Therefore even as interest in one toy wanes, providing immediate other alternative toys is advisable after which the cat might be fed a small meal or ignored for the next 40 minutes (Figure 4.7).

Since outdoor cats may capture up to 8–10 mice per day to meet their daily needs (not to mention the unsuccessful attempts), multiple small meals and multiple chase and play sessions may be beneficial.⁴² While there are many commercial cat enrichment products available, common household items such as ping pong balls or empty boxes provide opportunities for play and exploration. Dry food can be hidden around the house for the cat to “hunt” for its meal. Dry and canned food can be placed in food manipulation toys but an empty soda bottle or empty plastic food container with a few strategically placed holes can be used for dry food. Ice cube trays or egg cartons can be used to dispense canned food in small portions. Freezing canned food in an ice cube tray further slows feeding (Figures 4.5, 4.7 and 4.10).

Physical activity – exercise

Young dogs should be given sufficient exercise to dissipate an ample amount of energy. A 15-minute exercise period once or twice daily may be suitable for many dogs, but this may not meet the behavioral needs of some working dogs. In general, a dog has had enough exercise if it can be settled and relaxed between play and exercise sessions. Dogs with health issues or those that have not reached physical maturity may be at risk for physical problems when worked too hard or long.

Selection of an appropriate type and amount of play should be based on the breed (and the work for which it was bred), the owners, the household, and the dog's age and activity level. Active families may prefer to jog, run, or take long walks to satisfy their dog's needs. More sedentary families can accomplish the same goals by throwing a ball, toy, or flying disc for the pet to retrieve.



Figure 4.8 Many chew toys have been designed so that food can be used to stimulate interest by coating the toy or stuffing food or treats within the grooves or openings.



Figure 4.9 A variety of feeding toys have been designed to be filled with food which then challenges the pet to acquire the treats through manipulation. (Courtesy of Premier Pet Products, with permission.)

However, meeting the physical and mental needs of working breeds (e.g., Border collies, Labrador retrievers, Siberian huskies, German shepherd dogs) may be difficult to achieve, especially when obtained as household companions (rather than the work for which the dog was bred). Similarly, some breeds and individuals, such as terrier breeds with a strong prey drive, have much higher energy and stamina. While long walks, jogging, swimming, retrieving, playing catch with a Frisbee, training classes, or a play session in the dog park might be appropriate and sufficient, agility, coursing, flyball, competitive Frisbee, and ball games such as soccer or belly ball may be more intense or challenging. In addition, many activities are available that focus on working behaviors, including herding and retrieving trials, tracking, sledding, pulling carts, schutzhund, and treibball. Some breeds, such as Basset hounds, on the other hand, may be satisfied with walks through different neighborhoods to sniff out the interesting scents.



Figure 4.10 A cat toy that is filled with food which the cat then needs to manipulate to acquire each piece. (Courtesy of Premier Pet Products, with permission.)

It is not ideal to allow a young dog to sit around all week and then take it for a long run on the weekend. Owners should make plans to spend time each day with their dogs and then honor the commitment – both will benefit. Exercise periods are not only healthy for owner and pet, but are wonderful interactive sessions that help in the bonding process and can also prevent unwanted attention-soliciting behaviors. When owners provide a routine program of interactive, regularly scheduled daily exercise, this provides a more predictable daily routine, and a dog that may be calmer and more relaxed between outings. Sufficiently enriched dogs may be easier to train and may exhibit fewer anxiety-induced and attention-getting behavior problems.

Opportunities for cats to exercise are for the most part limited to interactive play with family members. Tossing toys or treats up and down stairways can help increase the energy output for cats that will participate. Some cats also seem to engage in their own “moments” of active play, such as tearing around the house for several minutes each evening. Although it might be preferable to engage the cat in alternative acceptable activities such as chase and feeding toys, this can be an “acceptable” outlet if damage and injury can be prevented.

Social play

Dog social play

Play and exercise sessions should be part of the daily routine, or problems might result (Box 4.8). Play is important for providing physical exercise and mental stimulation, maintaining good physical health, and building the relationship between family members and the pet.^{43,44} Insufficient play and stimulation may be underlying causes of a variety of behavior problems. The family should initiate play sessions to avoid reinforcing excessively demanding, excitable, and attention-soliciting behavior. The appropriate amount and type of play should be based on the needs of the individual (breed, age, energy level), as well as the lifestyle, health, and ages of the owners. Fetch, hide and seek, toss and find the

Box 4.8 Examples of behaviors that might be reduced or prevented by adequate play and exercise

- Destructive chewing, digging, and scratching
- Investigative behavior, garbage raiding
- Hyperactivity, excitability, nocturnal activity
- Unruliness, knocking over furniture, jumping up
- Excessive predatory and social play
- Play biting, rough play
- Attention-soliciting behaviors, such as barking and whining

treat, chase, round-robin recalls, and tug of war are all games most dogs enjoy. Although there has been some controversy about whether games that involve pulling, tugging, and rough play might be problematic, these types of play typically do not lead to the development of other behavior problems, except perhaps in dogs that cannot be controlled because they become too excitable and use their mouths inappropriately to grab and bite arms, legs, hands, or clothing, and those that cannot be sufficiently calmed down at the end of the play session.

Toys and play sessions are highly desirable, and might also be used as reinforcement for housetraining, formal obedience training, or for counterconditioning. Puppies should also be given the opportunity to play with other pets to help develop and maintain good intraspecific social skills.

Cat social play

Play and exercise sessions provide the cat with social interaction with the family and an outlet for exploration and play. If a kitten's needs for play, exercise, and social contact are satisfied, undesirable behaviors such as excessive nocturnal activity, destructive exploration, scratching, overly exuberant activity sessions, play aggression, and annoying attention-soliciting behaviors are less likely to develop (Box 4.8).

Feline predatory and play behaviors tend to occur as short periods of high activity. If the goal is to wear the cat out to curb undesirably exuberant play behavior, the play session should continue until the cat calms down and loses interest in the activity. However, even though a cat loses interest in one toy when the novelty wears off, it may still be raring to go if you change to another. If the pet loses interest after two or three play attempts with different toys it might be time for a break, or time to give the cat a small food-filled toy to change its focus to another activity. Play sessions should be designed to provide active chase-and-pounce targets. The family is most likely to engage cats in play by using moving objects that can be stalked, chased, swatted, or pounced upon. Cats may also engage in play with other housemates which can be encouraged if there are no untoward consequences.

Interactive cat toys include long wands with dangling toys that resemble prey, wiggling ropes, and objects that are thrown or rolled for the cat to chase (Figure 4.7). Periodically changing the toys the pet can access may help maintain novelty and interest. Battery-operated rolling toys, small plastic balls, walnuts, or ping pong balls will work for some cats. The family should avoid teasing the cat and allowing it to attack hands or other body parts.

Social relationships – dogs

Dogs are social animals and as such readily establish relationships with other dogs, as well as with humans, in their living group. Although dogs are capable of vocalizing, most of their social communication is accomplished by means of facial expressions, body postures, and occasionally by using body contact. This type of communication is innate, shared by virtually all members of the species, and is very important in establishing and maintaining social relationships. Dogs communicate and interact most effectively and comfortably within the framework for which they have been genetically programmed. Within the group, there may be a dog holding a social position that allows it to have more access to and control of resources. The ability of one dog to have more control depends on inherited traits, sex, size, hormonal status, learning from previous experiences, others in the group (animals and people), the environment at the time, as well as the relative confidence of other group members. The concept that a dog fits into the human family in a way that is analogous to a dog or wolf within a pack is a somewhat oversimplified and out-moded concept.

When we adopt dogs into a human family, they must learn to interpret the body postures, actions, words, and wishes of their owners. Canine behavior, communication, and basic learning principles are very important concepts for dog owners to understand if they are to be able to teach and shape desirable behavior successfully. A lack of understanding of what the owners are trying to communicate, inconsistencies in how the family responds to the pet's behavior, inconsistencies in training, and the use of punishment can lead to conflict, increasing anxiety, and uncertainty in the pet. The family should manage things the pet wants or needs, including food, play, and attention, and ensure that these are only given as rewards for behaviors that the owner wants the dog to repeat (Box 4.9). Rewards teach the puppy the desired response to verbal and/or visual cues, to accept and enjoy handling, to give up resources such as food or toys when requested, and to reinforce behaviors that the family wants the dog to learn to repeat (e.g., walk on a loose leash, settle in a crate).

The human response to the dog's behavior, vocalizations, and body postures teaches the dog what can be expected in future encounters. If the puppy learns that certain behaviors (e.g., nipping or biting) are successful at getting attention, play, and food, or in controlling social situations, then problems may develop when these behaviors are maintained into adulthood. Rewards must be given only for desired behaviors.

Dogs with assertive pushy personalities, those that are unruly or excitable, those that have a high resource-holding potential (i.e., possessive), and those that are difficult to motivate might be the most likely to develop into hard-to-control adults. When aggression does emerge it may be a result of learning, anxiety, conflict (internal and external), and resource-guarding. Where the dog sleeps and when the dog eats does not have any impact on the development of dominance hierarchies with family members. In very rare circumstances, dominance aggression might be a consideration in those cases where the owner has allowed a confident

Box 4.9 Establishing a healthy pet-owner relationship and communicating with your pet (client handout #19, printable version available online)

Household lessons for puppies

How to establish a healthy relationship with your puppy

Positive and consistent training, both in action and in attitude, are needed so that your puppy knows what is expected of it at any time. If the expectations are unclear for the puppy this may lead to a variety of problems, including unruly behavior, disobedience, and even aggression. Behaviors such as nipping, excessive mouthing, mounting, and jumping up should be discouraged by teaching appropriate or acceptable behaviors. These exercises will help you manage your pet, increase its dependability in responding to cues, provide structure and consistency, and help reduce impulsive behavior.

A. Be fair

1. Be consistent with rewards and interruptions. Set rules that everyone observes. This is the only way that the puppy can learn what is acceptable and what is not acceptable.
2. Don't take good behaviors for granted. Actively look for desirable behaviors and reward them with treats and praise.
3. Be generous with praise!
4. Never hit the puppy or use any type of physical punishment.

B. Make the puppy aware of your importance in its life

1. Walk your dog so your bond is stronger.
2. Provide a consistent schedule of social play and feeding so that life for the puppy is predictable.
3. Ask the puppy to say please by having it sit before all interactions (dinner, treats, toys, being picked up, walks, petting, play). Although sometimes referred to as "nothing in life is free" or "no free lunch," this rule structure is intended to provide clear and consistent communication for your dog so that it learns what behaviors will get rewards and what will not. In other words, if you are predictable and consistent, the pet will quickly learn what is desirable and anxiety and conflict will be reduced.

4. Once the pet learns to stay, ask it to stay for a second or two before following you around the home, in and out of rooms, and in and out of the home.

C. Teach desirable and prevent undesirable behaviors

1. Ignore attention soliciting and provide another outlet for your puppy. Nudging, whining, barking, mouthing, pushing, and leaning for attention should be ignored. Pull your hands in, lean away from the pet, and look away. Get up and walk away if the pet is exceptionally pushy and difficult to ignore. Once the behavior stops for 5–10 seconds, the pet can be given attention for responding to a cue such as sit.
2. Always respond to the puppy when the behavior is desirable (e.g., notifying you it has to go outdoors to eliminate).
3. Teach the puppy how to play appropriately with you.
4. Teach the puppy when it should bark and for how long (e.g., notify that someone is at the door). Then train and reward quiet behavior.

D. Be consistent

1. Train your puppy to respond to cues and do not expect it to be immediately responsive – your puppy is not a robot! If the puppy ignores you, wait a minute and ask again, quietly. If the puppy still does not respond, perhaps the puppy really does not know what is expected. Go back to basic reward training to better train the behaviors. Quiet and calm responses will encourage what is desirable, while anger or frustration can lead to avoidance or uncertainty (conflict).
2. Be certain that you have good control of each potential reward so that you are consistent in teaching what is desirable, and ensure that you are not inadvertently rewarding undesirable behavior. Each time the puppy is getting something of value, use the opportunity to train the puppy what you want it to learn (e.g., sit, down, relax, deference).

dog to gain control of resources on demand, but then confronts it to defer and give up a resource or privilege. However, simple resource guarding, conflict and learned behaviors are more likely explanations.

Social relationships – cats

As individual hunters feeding on small prey, cats are capable of living a rather solitary existence, even when food and resources are scarce. Being solitary, however, does not preclude social behavior. More recently, our knowledge of cat social structure has slowly evolved away from the widespread belief that cats are exclusively an asocial species. There is actually wide diversity in sociability and social structure in groups of cats. In free-living feline groups, the fundamental social unit is typically a group of females and successive generations of descendants. Relationships between neutered males are more similar to those among females than among uncastrated males. Adult males and some females are more solitary and, as such, do not form social groups. There is a great deal of individual variability based on genetic factors, early social interactions during the sensitive period (2–7 weeks of age), sexual status, and food availability. Encounters between solitary cats are rare, while group-living cats

display frequent social interactions. Even cats that spend most of their time alone may occasionally be seen in the company of other cats.

Social relationships between cats and humans also show widespread diversity. Cats differ greatly in personality and temperament. Genetic variability, which appears to have a stronger paternal effect, and the amount and quality of early handling and exposure to humans during the sensitive socialization period determine how social a cat will be with humans. Cats consistently fall into two personality types: sociable, confident, easy-going, or trusting, and timid, nervous, shy, or unfriendly.⁴⁵ In fact, approximately 15% of cats seem to be resistant to socialization with humans, which may be genetically based.⁴⁶ Some cats are independent, with little desire for contact with humans or other cats. Others maintain social relationships with people or other family pets throughout life. Most cats adapt well to sharing a home or apartment with people, other cats, and other pets. On the other hand, it is not unusual for some cats to have difficulty adjusting to changes in the household, particularly the introduction of a new cat.

A rigid social hierarchy does not exist within most cat groups. However, when cats are housed in a group in a relatively restricted environment, such as indoors within a home, there may often be one or more cats that the other

cats defer to or avoid. This may be a function of personality, learning, or both. These cats may control resources or may chase other cats in the home, while the more subordinate cats may avoid confrontation and retreat for the most part, but may maintain their position or even challenge the more dominant cat over some resources or when they are first to enter an area. Assertive, confident cats may also gain some control of family members. For example, if these cats are successful when they solicit petting, affection, attention, food, or play, then they learn that they can control the acquisition of these resources.

Inconsistency in the family's response to the pet's behavior can lead to anxiety and problems within the human–cat social relationship. Family member initiation of play and affection, some simple handling exercises (see below), training exercises (see section on [food lure training](#), below), and consistency in response to the cat's behavior will help to maintain a healthy cat–owner social relationship.

Handling and restraint

It is essential that puppies and kittens learn to accept and enjoy all forms of handling from responsible family members as well as other humans with which they will come into contact. The family should be advised to expose the pet to all types of handling frequently in the context of gentle play and social attention ([Figure 4.11](#)). Handling exercises should include gentle handling of the face, ears, feet, tail, collar, and haircoat ([Box 4.10](#)). Provided there are no signs of fear, anxiety, or resistance, the owner should gradually proceed to tooth brushing, grooming, lifting, nail trimming, and handling the muzzle and nape of the neck. The young pet should ideally also be taught using sufficiently motivating rewards to tolerate approaches and handling by family members while it is eating or playing with a toy ([Box 4.10](#)). A pet that is not accustomed to being handled may resist or become fearful or aggressive when handled by a groomer, veterinarian, trainer, or child.⁴⁷



Figure 4.11 Owners need to accustom puppies and kittens gradually to accept all forms of gentle handling, especially those that might become a source of anxiety or resistance (paw handling).

Prevention of problems – dog-proofing, cat-proofing, and confinement

The simplest form of prevention of undesirable behaviors involves separating the pet from the site of the problem, or confining it so that the undesirable behavior cannot be performed.^{48,49} A common misconception is that confinement is cruel or unfair. On the contrary, leaving a pet unsupervised to investigate, destroy, and perhaps get injured is far more inhumane. For kittens, caging may be useful but most kittens can be housed in a “safe room” with toys, a scratching post, and litterbox, provided there are no objects that can be damaged by climbing or chewing. Child locks and secured cupboards may eliminate the need for motion-activated alarms and spray cans when designing a cat-proof room.

Crate training is certainly not a necessity for all families and all pets. Owners who seldom leave their pets alone, and those that house their pets outdoors when they cannot be supervised, may require little or no indoor confinement. However, when owners must leave a new pet unsupervised inside the home, it is essential that it be confined to an area where it will not injure itself, cause household damage, escape, or eliminate in unacceptable locations. Some homes can be successfully dog-proofed by closing off doors to areas where the pet is not allowed, and by placing child gates across areas that are out of bounds so that using indoor avoidance devices is not necessary (see section on environmental punishment in [Chapter 7](#)).

Pet-proofing a room might be successful for some dogs but a crate, run, or pen is usually the safest and most secure form of canine confinement. Crate training is a tool for addressing many problematic behaviors, including housesoiling, destructiveness, digging, escape behavior, and garbage (trash) raiding. As long as a crate is big enough for the pet to stand up and turn around in comfortably, the dog gets sufficient exercise and attention, is not left in the crate longer than it can control elimination, and is not confined to the crate for very long periods, it can be a safe, secure, and humane place to confine it when it is unsupervised. The goal of crate training is to teach the pet to be comfortable in its crate when napping, relaxing, and confined when the family is away as well as for travel, or veterinary visits ([Figure 4.12](#)).

When a crate is used as a daily confinement area, its use should be limited to sleeping during the night and for periods not exceeding 4–5 hours during the day. Use of a crate is excessive if the pet is confined all night as well as 8–10 hours each day when the family is away from home. Also, use of the crate should not be regarded as a punishment where a dog is sent if it misbehaves. At each feeding time during the day, the owner can encourage the pet to go into the crate by repeatedly tossing pieces of dry food for it to chase into the crate. If the owner says “Go to your crate” each time the pet runs into the crate, it will eventually be conditioned to run into the crate on cue. Toys should also be placed in the crate periodically throughout the day, and occasionally a biscuit should be left in the crate so the pet is tempted to go into the crate on its own. This provides positive associations with the crate. It is ideal to start with short confinement periods and gradually lengthen them. The family should ignore vocalizations and should not

Box 4.10 Handling and feeding exercises for puppies (client handout #12, printable version available online)**Handling and feeding exercises for puppies**

The first goal (level 1) of handling exercises is to teach the puppy to tolerate and enjoy handling by family members and friends. The second goal (level 2) is to teach the pet to tolerate more intensive, firm, or unfamiliar forms of handling that might be necessary for restraint, grooming (including nail trimming, ear cleaning, and combing), teeth brushing, veterinary care, or that might arise in greeting or play with new people or children. If the puppy can be trained to associate these forms of handling with treats and play, it may not become problematic when the puppy experiences them later. The goal is to “proof” the puppy as much as possible to prevent it from getting upset if it is handled roughly or caught by surprise.

Similarly, feeding exercises are intended to help the pet accept and enjoy approach and handling during feeding.

Precautions

1. Avoid any type of handling during these exercises that causes the pet to become agitated or anxious.
2. If you observe threats or aggression during any of these exercises, seek guidance from your veterinarian, a veterinary behaviorist, qualified applied animal behaviorist, or a trainer before proceeding.
3. Reaching for the puppy should always be positive. Hand contact must always be considered a friendly (nonaversive) gesture. Never hit the pup or roughly grab its muzzle or neck.

Handling exercises**A. Level 1: teaching tolerance**

The goal of handling exercises is to accustom the puppy to accept and enjoy handling by friends and family members.

1. Begin by only working with the puppy when it is calm.
2. Gently inspect its ears, mouth, paws, belly, and haircoat.
3. Initially interact for only 1 second and end with praise or food (before the pup’s dinner time is a good time to do this).
4. Anticipate the puppy’s mood and reaction and always stop before the puppy starts to object.
5. Repeat the exercises frequently, gradually lengthening each interaction time.
6. Always praise the puppy when it relaxes while being handled.
7. Progress slowly enough to avoid eliciting resistance, aggression, or anxious behaviors. Don’t ever force the puppy to endure handling, especially if it seems uncomfortable or stressed.

B. Level 2: helping puppies to tolerate more intensive handling

1. Act calm and cheerful; offer food or a toy.
2. Speak quietly, and then gently touch, pet, stroke, or massage various areas of the body and around the collar while giving the pet food or a toy as well as quiet praise.
3. Gradually increase the intensity of touching, pushing, patting, and grasping different areas of the body (e.g., face, feet, muzzle, ears) as the puppy gets more used to it. Never cause pain or discomfort to the puppy!
4. Always praise the puppy and intermittently give favored treats whenever it allows handling.
5. Start with short sessions, anticipate the puppy’s attention span, and stop before the puppy gets tired of the exercise.
6. Consider your dog and lifestyle and adapt and progress with your handling exercises (gentle, positive, reward association) to what the puppy might one day be expected to encounter (e.g., brushing the teeth, lifting and carrying, bathing, grooming, cleaning ears, wiping feet, nail trimming).

Feeding exercises

Food bowl handling is intended to teach the puppy to feel comfortable and even learn to enjoy the presence of people while it is eating or near its food bowl.

- A. Stay with the puppy after you put down the food bowl. Give quiet praise while it is eating.
- B. Food bowl handling (teach that the hand is coming to give, not to take away).
 1. Quietly walk by the puppy while it is eating and drop a piece of canned food, meat, or cheese-flavored treat into the food bowl. When your puppy is happy with you doing this, then ask visitors to do the same.
 2. Occasionally reach down toward the bowl and put a food treat in it.
 3. Place the bowl in your lap or on the floor in front of you. Feed the puppy from the bowl. Handle the food, gently pet the puppy. Act cheerful, but talk quietly.
 4. Take the bowl away. Put a highly desirable food treat in the bowl, and then immediately give it back.
 5. Gently touch and handle the puppy while putting a food treat in the bowl.

Caution: These exercises are *only* for young, friendly puppies; if your pet is older, exceptionally shy, fearful, or aggressive do not do these, but contact your veterinarian or a behaviorist for help.

allow the pet out if it is barking, whining, or scratching. If it needs to be released, but continues to vocalize, the owner can first calmly give a command that the dog has learned e.g. sit/watch and reward or if unsuccessful try a distracting noise (whistle, hand clap) in an attempt to get the pet to orient toward the sound and be quiet. This period of quiet can then gradually be increased before the dog is let out of the crate. Introducing the pet to a confinement pen can be done with the same approach used for crate training. As the pet becomes consistent about using a proper elimination area and does not explore or damage the home, the confinement door can be left open during short departures and gradually the time left out of the confinement can be increased (Box 4.11).

Setting the pet up for success

Owners must be taught that it is far more productive and effective to train and guide the puppy or kitten into acceptable responses (e.g., what to chew, where to scratch and eliminate) rather than trying to punish the pet for every behavior that might be undesirable. A few simple rules will greatly increase the chances of success while eliminating or minimizing the need for punishment.

1. *Reward-based training:* using positive reinforcement (food lure–reward training) to teach the pet to understand and immediately obey a few basic cues is the first step.



Figure 4.12 By making crate associations positive, they can become a comfortable retreat for both dogs and cats.

2. *Supervision:* young and new pets should constantly be within eyesight of a family member. A leash attached to a collar, halter, or harness can be used to keep the pet close by. A bell on the pet's collar can also aid in supervision.
3. *Provide for the pet's needs:* overall success is more likely to be achieved if all of the pet's innate needs are considered and met. For example, chewing, scratching, climbing, perching, bedding, food, and elimination are some of the needs that will need to be met. Other needs include play, mental stimulation, physical exercise, and social interaction.
4. *Prevention and confinement:* access to areas and objects that might be targets of undesirable behavior should be prevented. Family possessions should be put out of reach. The pet should be confined when it can't be supervised. Pets that must eliminate during the time that the family is away for long periods will need to be provided with access to an elimination area that is acceptable to the family.

The role of rewards and punishment

The effective use of rewards and punishment is discussed in detail throughout this book as they apply to learning principles and to behavior modification. Rewards can be used to reinforce desirable responses and turn potentially anxiety-evoking situations and events into ones that are positive.

For example, a dog might be given attention for growling or barking in an attempt to calm it down. Dogs that solicit play and affection by whining, mouthing, chasing, or jumping up often get the very attention they are seeking, and this ensures that the behavior will be performed in the future. In addition, owners that use physical forms of punishment in an attempt to stop attention-seeking behaviors might either serve to reinforce these behaviors, or make the dog increasingly fearful, anxious, and conflicted about

whether or not to approach during greeting, depending on how the punishment is applied. See [Box 4.12](#) for our handout on reward training. For more details and definitions on rewards, punishment, and behavior modification, see [Chapter 7](#).

Reward selection and timing

An effective reward should be highly appealing, given immediately when the desired response is exhibited (contiguous), and only when the response is exhibited (contingent). If rewards are given too often at other times, they may lose their reinforcement value, depending on the reward. The value of any particular item as a reward will vary from pet to pet, based on individual differences, previous experience, and the availability of the reinforcer (i.e., save special treat rewards for training).

Reinforcer assessment is the process during which rewards that might best motivate the pet are determined. Although pet food or treats might be sufficiently appealing for some dogs, other special food items (cheese, popcorn, meat, fish paste, fish pieces) might be more motivating and therefore better for reward training for other dogs at other times. Favored toys, walks, and affection can also be used as rewards. It can be a challenge to find rewards that are sufficiently motivating for some cats. Novel and favored food treats may be effective, as might catnip treats and favored toys. Some cats are also motivated by affection or play. Deprivation can be used to increase motivation. For example, meal times can be delayed until the pet is hungry (although not to the point that a dog might become hypoglycemic) and more interested in food rewards, play and affection periods can be withheld until training times and chew toys withheld until crate times.

Control resources, manage the pet

Prior to receiving food, play, treats, or anything else the pet wants or needs, it should be asked to respond to a verbal or visual cue. Controlling access to resources in this manner helps establish and maintain a desirable social relationship with the family. On the other hand, pets that successfully demand and get attention, food, and other resources whenever they want may tend to take family members for granted and are less responsive to wishes and cues given by the family. If the pet knows it can get a treat or attention whenever it wants, food and attention lose their value as reinforcers for training.

Whenever the pet approaches to 'demand' attention, play, food, or affection, it can be immediately asked to sit or it can be ignored (say please, structured interactions). This includes refraining from making eye contact, talking to, or touching the pet. Any response may serve to reinforce the behavior and allow the pet to control how and when the reward is obtained. If the pet persists to a point where the owner can no longer ignore the behavior, then it might be possible to walk out of the room, and even close the door until the pet ceases the behavior. After the pet has settled for a sufficiently long period of time (this should gradually be increased), the owner can whisper a soft "good dog" or can call the pet, ask it to respond to a sit or down cue, and then give it the attention it desires.

Box 4.11 Crate training (client handout #5, printable version available online)**Guide to crate/confinement training**

Confinement training is intended to provide a comfortable and safe area or “den” for the dog, while restricting access to areas where it might house-soil, do harm to itself, or cause damage. Crate training should be considered akin to placing a young child in a playpen or crib for playtime or sleeping. Other alternatives for confinement include housing the dog in a pen, run, or dog-proofed room, where it might have more freedom to stretch out, chew, or play with its toys. If you don’t provide a safe confinement area at times that you cannot supervise, your dog may engage in stealing, chewing, or ingesting household possessions, eliminate in undesirable locations, and get into potentially dangerous situations.

The location and methods should be designed to keep the experience positive. For example, the dog should be encouraged to sleep, nap, or play with its chew toys in its confinement area. On the other hand, if the dog is confined at a time when it is in need of play, attention, or elimination, then escape attempts and anxiety are to be expected. If a dog’s attempts at escape are successful, then future, more ambitious attempts to escape are likely to occur; therefore always use a secure, inescapable form of confinement.

Benefits of a crate/confinement-trained dog

1. Security – a specific area that serves as a den or resting area for the dog
2. Safety for the pet
3. Prevents damage (chewing, investigation, elimination) to the house
4. Aids in the training of proper chewing and elimination by preventing failure and encouraging success
5. Traveling: accustoms the dog to confinement for traveling and kenneling
6. Improved bond: fewer problems, less discipline for the pet and less frustration/anxiety for owner

Crate training

1. A metal, collapsible crate with a tray floor or a plastic traveling crate works well, provided it is large enough for the dog to stand and turn around. Some dogs adapt quicker to a small room, run, or doggy playpen.
2. Because dogs are social animals, an ideal location for the crate is a room that the family frequents such as a kitchen, den, or bedroom, rather than an isolated laundry or furnace room. If you have observed your dog choosing a particular corner or room to take a nap, or you wish your dog to sleep in a particular location at night, then this might be the best location for the crate.
3. For the crate to remain a positive retreat, it should *never* be used for punishment. If social isolation (time out) is used, consider placing the dog in a laundry room or bathroom until it is calm.
4. A radio or television may help to calm the dog and may help to mask environmental noises that can trigger barking. A pheromone (Adaptil) spray in the crate or a diffuser in the room may help to calm the puppy.

Puppy crate training

1. Introduce the puppy to the crate as early as possible. Place a variety of treats, toys, or food in the crate so that the puppy is motivated to enter voluntarily. Training to respond to a cue (e.g., “Go to your kennel”) can also be useful.
2. The first confinement session should be after a period of play, exercise, and elimination (i.e., when it is time for the puppy to rest). Place the puppy in its crate with a toy and a treat and close the door. If you remain nearby and the puppy is tired it might soon settle and nap. Alternatively, if the puppy lies down to take a nap, move the puppy to the crate for the duration of the nap.

3. Leave the room but remain close enough to hear the puppy. Some degree of distress vocalization may be expected the first few times the puppy is separated from its family members. Always reward the pet when it is calm with quiet praise. Try not to let it out when it cries or whines. Release the puppy when the crying stops, when it awakes from its nap, or if it is time for you to wake the puppy for feeding, play, or elimination (e.g., prior to your departure).
4. If crying does not subside on its own, a mild interruption may be useful. Any interruption that causes fear or anxiety must be avoided since it is not psychologically healthy for the pet and could aggravate the vocalization or cause elimination in the crate. During the interruption, you should remain out of sight, so that the puppy does not learn to associate the interruption with your presence. A sharp noise, such as that provided by a shake can containing a few coins, can be used to interrupt barking. Then, after 5 seconds of quiet behavior, reward the puppy for being quiet by softly praising.
5. Repeat the cage and release procedure a few more times during the day, including each naptime and each time your puppy is given a toy or chew with which to play. Always give the puppy exercise and a chance to eliminate before securing it in the crate.
6. Prior to bedtime, the puppy should be exercised, given a final chance to eliminate for the night, and secured in its crate. Do not go to the pup if it cries but ensure that the puppy is not hurt or overly distressed. If the puppy cries in the middle of the night, it should not be ignored if it is indicating that it needs to toilet. Release the puppy when it is quiet and time to get up. Puppies under 4 months of age may not be able to keep their crate clean for the entire night, so it may be necessary to get up during the night initially as well as provide an early-morning walk for the first few weeks. Sometimes the best way to reduce distress vocalization is to locate the crate in the bedroom.
7. Never leave the puppy in its crate for longer than it can control itself or it may be forced to eliminate in the crate. If the pup must be left for longer periods, a larger confinement area with paper for elimination, a puppy litterbox, or access to an elimination area outdoors through a dog door will be necessary.
8. Until a puppy has been housetrained (no accidents for at least 4–6 consecutive weeks) and no longer destroys household objects in your absence, it should not be allowed out of its confinement area except under supervision. During supervision, desirable behaviors should be rewarded and undesirable behaviors prevented or redirected.

The adult dog

1. The two most important principles for effective crate training include locating the crate (or confinement area) in a location where the dog feels comfortable about sleeping or napping and gradually introducing the dog to confinement in a positive manner.
2. Set up the crate in the dog’s feeding area or sleeping area with the door open for a few days. Place the dog’s food, treats, and toys in the crate so that it enters the crate on its own.
3. Once the dog is regularly entering the crate voluntarily, begin closing the door for very short periods of time and follow the same principles as puppy training above.
4. At this point, the dog could be left in its crate during bedtime or during short departures.
5. Some dogs may adapt quicker to crate training by having the dog sleep in the crate at night.
6. If you are leaving your pet in a crate be certain to determine how often it needs to eliminate and how long it can be confined without social contact or exercise. While some dogs may manage

Box 4.11 Crate training (client handout #5, printable version available online)—cont'd

for a full work day, it is likely in most dogs' best interest to arrange for a midday dog walker if you are going to be gone for more than 4–6 hours.

Crate-training problems

If your dog is particularly anxious or eliminates in its crate, then it may be an indication that some part of the crate-training technique needs to be revisited.

1. It may be possible that the dog is being left in its crate longer than it can control elimination. Confine the dog for a shorter time and be certain that it has eliminated prior to confinement.
2. If the crate is overly large some dogs may sleep in one end and eliminate in the other. Consider a smaller crate or a divider.
3. If your dog is anxious or attempts to escape when left in its crate, then it may not have been accustomed to its crate in a gradual and positive enough manner. Review the steps above so that the crate is in a comfortable bedding location, that each introduction is positive, and that the crate is not used for punishment.
4. If the dog has previously escaped from its crate, this may encourage further escape attempts. Change to a more secure confinement area or ensure that the crate is inescapable. It may then be necessary to supervise the dog in its crate for a period of time to help reduce anxiety and deter further escape attempts.
5. Some dogs are particularly resistant to crating. These dogs may adapt better to other types of confinement such as a pen, dog run, small room, or barricaded area (e.g., using a child gate).
6. Rule out separation anxiety as a cause of crate anxiety.

Box 4.12 Using rewards effectively (client handout #22, printable version available online)**Reward-based training**

The key to the effective use of rewards involves giving the reward immediately when the desired response is exhibited (contiguous) but only when the response is exhibited (contingent). For positive reinforcement to be effective, the reward must be given immediately following the desired response so that it increases the chance that the response will be repeated.

Reward selection and timing

1. Anything that your pet enjoys can be a reward. This can include treats, food, a toy, attention, play, affection, going for a walk, or even a rub of its head or belly as long as it is given immediately when the behavior is performed and at a time when your pet wants it. Since there is a great deal of individual variation you must first choose the rewards that most appeal to your pet.
2. Whenever you give the pet something it enjoys, you are positively reinforcing whatever behavior the pet is performing at that time, whether desirable or undesirable. Therefore, never give a reward unless it immediately follows a behavior you wish to encourage. Therefore if the pet is exhibiting an undesirable behavior that you should not reinforce, ask the pet to perform another acceptable behavior or ignore it until it behaves acceptably and immediately reward that behavior.
3. Predictable rewards: rewards should be used only as positive reinforcement for desirable responses. The focus should be on owner consistency and predictability so that the pet learns what behaviors (e.g., sit, lie down) get rewards. Then when the pet responds consistently and reliably the owners can add cue words and gradually shape longer and calmer responses.
4. For some dogs, food rewards are more effective when the pet is hungry, such as around meal time. Therefore, if treats are not exceptionally appealing and your pet is fed free-choice, it might be better to switch to a feeding schedule. Training can be held just prior to meal times in order to increase the appeal of the rewards.
5. Reinforcer assessment: assess the motivating value of rewards and place them in order from most desirable to least desirable. Use your dog's most favored rewards or multiple rewards (reward jackpot) to shape and reward newer, more difficult, or more exact training responses and use lesser rewards for intermittently reviewing and rewarding previously learned responses or less exact responses.
6. Timing: dogs learn the fastest when the most valuable reward is given immediately following the desired behavior, every time the behavior is performed. Later, a switch to a variable intermittent reward schedule will help your pet continue to exhibit the desired behavior.
7. Secondary reinforcers: a clicker can be paired to a food reward by consistently sounding it just prior to giving the food until it becomes a conditioned stimulus for food. The value of a clicker is that it can then be used as a reward to mark correct responses immediately in a convenient and precise manner, with the food being given shortly afterwards. Other reinforcers such as praise or stroking may be sufficient to reinforce behaviors but may get more consistent responses if they are paired intermittently with a food treat.
8. Extinction: if you stop reinforcing a previously reinforced behavior, it will eventually stop being performed. This is often the best way to stop undesirable behaviors that have been reinforced by attention, praise, affection, or food (e.g., jumping up, barking). However, behavior problems that have been rewarded intermittently will take much longer to become extinct.

Cue–response–reward training

1. In simple terms, you need to give a cue prior to a behavior and then reward the desired response immediately and every time until the pet consistently responds. Begin the training in an environment with few distractions when the pet is calm. Start with simple verbal and visual (hand) cues, and gradually progress to more difficult cues in more difficult environments. Use mildly appealing treats at first, and save the highly favored rewards for later when the pet is giving more improved responses in difficult situations. This will encourage the dog to progress and improve. Alternately you can give a strong reward the first few times but then save them for increasingly better responses (longer, more relaxed, more distractions) later in training.
2. If the pet does not immediately respond to the cue then there are several possible explanations. The dog does not understand the cue, the dog has not heard the cue, or the motivation to perform an alternative behavior is greater (distraction). If you are sure that the dog understands the cue, then you could give no reward and wait so that the dog can decide how to respond or progress a little more slowly. Another option is to consider a physical control device such as a leash and head halter to guide the dog into the correct response physically.
3. Punishment should *never* be used for training. Punishment for incorrect responses may stop undesirable behavior but can lead to fear and anxiety, damage the bond with your dog, and will in no way encourage your pet to display the desired response.

Box 4.12 Using rewards effectively (client handout #22, printable version available online)—cont'd**Training with rewards: cue–response–reward**

1. If a cue is paired with a response and there is immediate reward, the pet should learn the desired response for each cue. Once a response can consistently be achieved on cue, shaping can be used to progress to more difficult responses in a variety of environments.
2. Food lure training
 - a. The movement of food is used to lure the pet into performing the desired behavior. Holding and wiggling the food in front of the dog should lure the dog into a “come,” while moving the food upward and back over the head should lure the dog into a “sit.” Moving the food down and slightly forward should lure the dog into a “down.”
 - b. A cue word (command) is spoken only after the pet has performed the behavior several times.

Then the word cue should be given as the pet is performing the movement.

- c. The food is given *immediately* upon completion.
- d. As training progresses, the lure is made less obvious by being presented in a closed hand, and quiet praise and stroking are intermittently substituted for the food reward.

3. Observe and reward

Observe the pet for desired behaviors and reward immediately. If a behavior can be anticipated, a cue can be given just prior to the behavior and then an immediate reward can be given once the behavior is completed. Some dogs can learn to eliminate on cue with this technique.

4. Physical prompt and fade

Give a verbal and/or visual cue as you use a prompt such as a head halter or hand prompt (e.g., guiding the pet into a sit position) to get the desired response, and then reinforce. Over time, the prompt can be faded (i.e., gradually removed).

5. Shaping

Determine the desired response and reward behaviors that approximate the response. Once successful, only behaviors that are slightly closer to the desired goal are rewarded, while less accurate responses are no longer rewarded.

Punishment

1. No physical punishment should ever be used. *Never* hit the pet, throw it on its back, shake it by the scruff, push the lips against the teeth forcefully, or use any other type of physical correction.
2. If you observe the pet doing something that is undesirable, interrupt the behavior in a manner that is sharp, startling, and strong enough to stop the undesirable behavior immediately without causing the puppy to be anxious.
3. After interrupting the undesirable behavior, you should guide your pet into the proper behavior and reward it immediately.
4. A leash and head halter can be used to guide the dog into position, and a release of pressure and positive reinforcement given for success (Figure 4.13).
5. If the undesirable behavior occurs when you cannot interrupt and guide your pet into the proper behavior, then you will need to look at ways to prevent the behavior occurring rather than punishing the behavior.



Figure 4.13 A long lead and head halter are left attached for immediate control.

Clicker training and secondary reinforcers

When it is not possible to reward a desirable behavior immediately with precise timing of the reward, it can be best to utilize secondary reinforcers that signal to the dog that it did the right thing and that a reward will be shortly forthcoming. Clicker training pairs the neutral sound of a clicker with a very favored primary reward, such as a treat. Eventually, the clicker becomes a predictor that food or another reward will soon be given. This allows the trainer to use the

sound of the click to reinforce the desired behavior. This is particularly useful when the owner is not in a position to give the food reward immediately (e.g., dog lying on its mat at the other end of the room). Over time the clicker provides a means of shaping small increments of improvement (e.g., gradually more relaxed behaviors) and allows a small delay from when the owner gives the click (e.g., when the dog is eliminating in a desired location) and the owner gives the food. While some trainers suggest pairing a word such as “yes” with the food reward, this can be somewhat less effective since the spoken word can have variable emotional intentions and unlike a clicker (which can be saved exclusively for reward training) might be used in everyday interactions (such as saying “yes” to a child or spouse) and may be used at times when no reward is given (e.g., saying “yes” to a spouse). See www.clickertraining.com and our resource list (Appendix B) for further details (Figure 4.14). In practice, other devices, such as horns, whistles, or the use of a phrase such as “good dog” or “good kitty,” can also become secondary reinforcers if they are immediately and regularly paired with primary reinforcers such as stroking, food, treats, or affection.

Punishment

Punishment is used to reduce the chance that a particular behavior will be repeated. To be successful it must be sufficiently aversive to deter the pet, must be applied during the behavior, must be consistently paired with the behavior, and should not be so intense that it creates other problems such as fear or aggression. Punishment which involves a



Figure 4.14 Clicker training is effective for immediate timing of rewards for desirable behaviors.

nonsocial stimulus (e.g., novel or loud noise) is preferable to a social punishment (e.g., yelling at the pet). The stimulus is sufficiently aversive if the undesirable behavior stops immediately, the pet shows a slight startle response without any sign of fear, and will readily come to the owner without any hesitation. Anything the owner does that results in any sign of fear or avoidance is inappropriate (for further details see [Chapter 7](#)). If the undesirable behavior is repeated then the punishment has not been effective as the motivation to perform the behavior is greater than the punishment. Punishment should be stopped as it may lead to the owner using increasingly aversive techniques without the pet learning what is the desired behavior.

Under no circumstances should the owner ever strike the pet with a hand or anything in a hand. Owners must understand that if they strike their pet, the consequences can be disastrous. To avoid defensive aggression, the human hand should only be associated with affection, play, or rewards. Physical punishment can lead to handshyness, fear biting, avoidance of humans, aggression, and submissive urination.

Basic training

Ideally all dogs should learn basic obedience cues such as “come,” “sit,” “stay,” and “down.” The dog that learns to roll over or play dead may be fun at parties, but the basic skills could mean the difference between life and death. Dogs that will not stay or come when called may end up in front of a car on the road. There are numerous books and videos dealing with training, but formal obedience classes or private lessons with a suitably qualified trainer are still the best way to learn. This puts family members under the supervision of a trainer, where they are less likely to make fundamental errors. Classes also afford an opportunity for socialization

with new people and other dogs, an important part of behavioral development. Take the time to visit training classes personally so that you don’t inadvertently refer a family to a trainer who is not reputable.

Cue–response–reward training

There are a number of training methods that might be considered, based on the needs of the pet and the owner and the expertise of the trainer. Training techniques should be based on the use of positive reinforcement and the principles of learning and conditioning. In simple terms, you need to give a cue, ensure success, and reward the desired response immediately. The trainer needs to proceed slowly with simple cues in quiet environments and gradually progress to more difficult cues in more difficult environments. By rewarding early, less exact responses with small, lower-value treats, and saving larger, more favored rewards for more exact responses, the pet will continue to progress and improve. Clicker training, target training, and lure–reward training are highly effective methods. If additional physical control is needed, a leash and head halter can be used to prompt the dog to respond. Regardless of the method used, once the cue is given, the goal is to get the desired response and reward the response, while unsuccessful responses earn no rewards. Punishment can be a dangerous tool for training. If it is too harsh, inconsistent, or poorly timed, it may lead to fear and anxiety and damage the bond with the owner.

Food lure training

Training is important for all dogs. For best results, the family should start teaching the dog when it is 8 weeks of age, use positive reinforcement, and avoid harsh physical techniques. This will help the dog learn faster and make the training process more fun. Early training can be a big help in teaching manners, socializing the pet, and managing unruly behaviors. It also decreases handshyness because the puppy associates an outstretched hand with food. Young pets appear easier to train than adults because they are usually more highly motivated by play, toys, and novel food treats, but they are more easily distracted. Asking the dog to respond before it gets anything reinforces desirable behavior and helps define the dog–owner relationship. Dogs can be taught to come, sit, and lie down using food lure–reward training. Using the simple techniques described below, this can even be done during a routine veterinary examination. Some basic training procedures using food lure techniques are reviewed in Appendix C, form C.4 (client handout #2, printable version available online). Using food lures and positive reinforcement, most cats can learn obedience cues as easily as other animals.

For most dogs, the best choice for a food lure is the pet’s own dry food. If this is not sufficiently appealing, try small pieces of semimoist dog treats or freeze-dried liver. An excellent time to train the pet that is picky about treats is just prior to its dinner time, as the dog should be more focused on the food and quicker to respond.

The training involves using the food to lure the pet into the desired response as a cue word is given. Immediately following the response, the food is given as a reward. The food will gradually be phased out as the pet learns the



Figure 4.15 Food lure training is an excellent way to teach a “come” cue.

correct response. This is done by picking only the best responses (best position, quickest response, etc.) to reward, and withholding food rewards for less exact responses during subsequent training sessions. One of the advantages of food lure training is that your pet will learn two cues for each desired behavior. Since hand movements with the food lure accompany the verbal cues, the pet will also be conditioned to respond to hand signals. Learning a double signal (auditory and visual) will increase compliance.

So that the pet learns with a minimum number of mistakes, training should be postponed when the pet is overly energetic or distracted. Training should begin in a quiet area; initial sessions should be short, and stop before the dog begins ignoring cues. When the pet’s response to cues becomes dependable, you can gradually take the training to environments with increasingly greater distractions. The owner should focus on one cue until the pet responds dependably before moving on to the next cue.

Tone of voice is important. A happy, high-pitched tone of voice should be used when teaching “come,” “sit” and “down.” An upbeat tone will help motivate the pet to move. A deeper tone is more likely to cause the pet to hold its place when teaching the “stay.” Do not repeat the cue over and over again if the pet doesn’t respond as the pet may learn that the cue may be “sit sit sit sit” rather than “sit.” Whenever a food reward is given, the owner should say “good dog.” The pet will learn to associate the words with food, and the words will eventually become a valuable secondary reinforcer to sustain the response as the food is gradually withdrawn (Figure 4.15).

Recall

Say the dog’s name so it turns and makes eye contact. Extend the hand toward the pet with a piece of food in it. Wave the hand with the food toward you and say “come” as the pet runs to you. Give the piece of food to it as you say “good dog.” Take a few steps back. Show the pet a second piece of food, say its name, and repeat the cue for food. The pet will learn two cues to come: a verbal cue and a visual cue.

Sit

With the pet in a standing position, hold a small piece of food in front of its nose. In a steady, slow motion, move the



Figure 4.16 A puppy will quickly sit when a piece of food is moved over the top of its head.



Figure 4.17 Food lures can also be used to entice a dog into the “down” position.

food back over the dog’s head. The pet’s nose will point up and the rear end will ease down to the floor, taking it into the sit position. Say “sit” as the rear hits the floor and give the food. Avoid holding the food lure too high over the head or the pet will jump up instead of sit. It won’t be long before you’ll notice that the dog will go into the sit position when you sweep your hand in an upward movement, even without food (Figure 4.16).

Down

Begin this lesson with the dog sitting on a smooth surface. Quickly move a piece of food downward from in front of its nose to the floor directly between its front paws. As the front end of the pet slides down to the floor, immediately give the food. The food must meet the floor close to the pet’s paws. Otherwise it is likely to stand up and walk toward the food lure. Eventually, a downward sweep of your hand by itself will cause the dog to go into the down position. This cue may take a little more patience and time than the first two. The word “down” should only be used once the dog has exhibited the desired behavior and only when teaching this cue. If the same word is used to tell the pet to stop jumping on people or to get down off counters and furniture, it may be confused about its meaning (Figure 4.17).

Stay

The “stay” cue is probably the most challenging command to teach a young dog. Only attempt to teach this cue when the pup is calm. A helpful strategy is to wear the dog out with a long walk or play session just prior to training.

Ask the pet to “sit” without using a food lure. The second the pup sits, lean toward it, extend the palm of your hand toward it and whisper “stay.” Immediately reward the pup. Once the pup has managed to stay several times with immediate rewards, wait 1 second, then reward and calmly praise.

Always give a release cue – “OK,” or “free”. Repeat the cue, adding another second to the stay following every five or more repetitions. Once the pet can stay for at least 20 seconds, begin working on distance. Ask the pet to “stay,” and take one step away from it. Gradually work from a 1-second to a 20-second stay at this position, then move back two steps and repeat the process. In no time at all, the pet will be staying for longer periods at a significant distance.

Common causes of failure include attempting to make the dog stay too long or at too far a distance too soon, as well as attempting to get the response when the pet is too active or distracted. Try to anticipate when the pet will become bored with training and stop well before then. If the pet’s eyes start to wander or it seems like it might move too early, calmly repeat “stay,” reward the pet, then quickly release the pet.

Walk nicely on lead

The goal is to teach the pet to walk without pulling on a loose leash. The initial training should be short and held inside without distractions. Later, training can be moved to the yard, and then to sidewalks. If the pet continues to pull, a head halter may help.

Begin the training session by asking the pet to “sit.” The convention is to stand on the pet’s right side, facing the same direction. Take the leash in your left hand, holding it about 60 cm (2 feet) from the pet. Show the pet a treat or toy held in the right hand. Say “heel” or “let’s go” and walk forward, keeping the pet’s attention on the object in your right hand. Take 1–2 steps, stop, ask the pet to “sit” and reward it with the food or a pat on the head. Repeat, gradually taking more steps between each “sit” cue. Use an upbeat, animated tone to keep the pet’s attention. Say “heel” or “let’s go” and reward the pet with praise and/or a treat whenever it walks along at the same speed and the leash is slack. If the pet begins to pull, stop and ask the dog to sit and look, reward these behaviors and start again.

Selecting an appropriate training collar: to choke or not to choke

The goal of training is to teach the pet to respond to a variety of cues. To be successful, the owner must first be able to get the pet to exhibit the desired response each time the cue is given, beginning in environments where success can be readily achieved and then moving on to potentially more challenging, distracting situations. To achieve this, the owner can use a lure such as food or a toy (lure-reward training) or a closed-hand target (target training) to lead the dog to

the correct response. Alternatively, a training device such as a head halter and leash can be used to prompt the appropriate response from the dog.

Unfortunately, many people still rely on punishment or ‘corrections’ which are intended to discourage or reduce undesirable behavior rather than train and encourage desirable behavior. Commonly used devices for punishment include choke collars and pinch collars. However, punishment does not teach the dog what it is supposed to do. Punishment can also cause fear, anxiety, aggression, and discomfort, or even actual harm to the pet. Some dogs may even respond by attacking the person who is administering the punishment. Therefore, the use of punishment is not an acceptable method of training, and may in fact be counterproductive.

What is perhaps confusing is that many dogs appear to have been successfully obedience-trained with punishment. In fact, many of these dogs have actually been trained with negative reinforcement, where the pain or discomfort is released as soon as the desired behavior is exhibited. This is a difficult concept to teach, and requires impeccable timing. In addition, some dogs that have been trained with punishment may be fearful of misbehaving in the trainer’s presence. These dogs may then be labeled as “one-person dogs,” because the dog is only responsive to a trainer who can successfully administer punishment. On the other hand, dogs trained with rewards and shaping should respond to the commands of any family member as long as the cues are consistent and the training is positive.

Neck control versus body control

The goal of training is to have a pet that is responsive to cues, without the need for any form of physical restraint. However, dog owners may not be able to achieve sufficient control and training solely with cues for the pet to come, stay, or heel on cue consistently, in all environments and situations. Therefore, some form of physical restraint is usually necessary, particularly when the pet is not safely confined to the home. Over time the pet may learn to respond more immediately and effectively to verbal cues without the need for a physical device (at least in environments where there is no risk). However, except for designated off-leash areas, a control device, such as a lead, is often mandatory when the pet is off property.

There are a wide range of leash, halter, and harness systems that can be used for walking and training. Traditionally, a leash attached to a collar around the dog’s neck is the most common form of physical control used in most countries. However, concern is growing about the safety and logic of controlling a pet with devices that encircle and sometimes tighten around the neck and trachea. Therefore it is becoming increasingly more common for head halters and body harnesses to be used for routine control.

Choke, pinch, and prong devices

Choke, pinch, and prong collars have been designed to control and train in a manner that makes it increasingly uncomfortable if the dog does not obey. The more forceful the owner’s pull, the more discomfort for the pet. Choke collar training has been used as a means of applying negative reinforcement by pulling on the choke collar until the

desired response is given, and then immediately releasing the pressure. Unfortunately, as many owners are unskilled, untrained, or unsuccessful in the use of negative reinforcement, they may actually be using the choke collar as a punishment device, and if unsuccessful they may escalate to pinch and prong collars. While these products might be more successful at inhibiting undesirable behavior, using them to punish is not acceptable since even if they suppress the undesirable behavior, they can cause fear and anxiety. Thus each time the pet lunges forward or barks, a correction with choke or prong could condition a fearful response to the approaching stimulus (people, pets, cars). In addition, it is possible to see pets continue the behaviors despite these collars and develop wounds at the sites of the prongs.

Remote-activated collars

Remote-activated collars with a spray, tone, or shock can be used to deter undesirable response. If used for training, the pet should be taught that the discomfort will be terminated as soon as the desired response is achieved (negative reinforcement). Products that use shock are painful and illegal in some countries. In addition, products that deter the pet by causing fear are counterproductive since, even if they suppress the behavior (e.g., lunging, barking), the dog can become increasingly fearful each time the situation is repeated (e.g., meeting new people, dogs). On the other hand, a remote-activated spray collar may be successful in interrupting undesirable behavior without causing pain or undue fear, with consistent owner supervision and proper timing during undesirable behaviors such as garbage raiding, coprophagia, or eating stool from the kitty litter. However, if the spray is ineffective after two or three attempts or causes undue fear or anxiety then its use cannot be justified for humane reasons. Another remote product is a collar that gives a mild vibration, which has been designed for training deaf dogs. In addition, tones and vibrations could be used as conditioned stimuli if paired with a food reward (see section on clicker training, above, for details) to reinforce desirable behavior remotely and immediately.

Body harnesses and head halters

Body harnesses and head halters are two alternatives to neck collars. Some body harnesses merely serve as restraint devices. Another group of harnesses pull from behind the dog and restrict the fore legs to reduce pulling. However, newer harnesses have been designed that attach at the front of the chest not only to stop pulling but also to be able to gently turn the dog around and away from potential problems (see Figure 14.2). However, these devices do not provide control of the head and muzzle.

A number of products are now available to control the dog around the head instead of by the neck. Since dogs tend to resist pressure, pulling back on a neck collar will cause most dogs to propel themselves forward, putting pressure on the trachea and possibly increasing intraocular pressure.⁵⁰ On the other hand, physical control of larger species such as horse and cattle are accomplished with a head harness and short slack using the principle “where the head goes, the body follows.” Head halters (e.g., Gentle Leader, Snoot Loop, Halti, and others) have both a neck and nose strap

adjustment. They can be used either to control the dog when the owner is holding the leash, or used with a 2–3-meter-long leash or drag line left attached (while supervising the dog) for immediate remote control. In one study, dogs attending puppy classes and fitted with Gentle Leader head halters had a reduced risk of relinquishment.²⁵ Different brands of head halters fit in slightly different ways, and might therefore better suit different breeds, individuals, and applications. For example, the Snoot Loop has additional tightening buckles on side straps that provide a tighter fit on some brachycephalic dogs. The head halters that pull from behind the head, as opposed to those that attach under the chin, may be a good choice for controlled walks but may be



Figure 4.18 The Gentle Leader head halter can be used with a hand for support to get the dog into a sit position focused on the owner (as in the “sit,” “quiet,” or “watch” cues).



Figure 4.19 In this sequence the Gentle Leader is used to prompt the dog into a calm, sitting position without the hand support while facing forward.



Figure 4.20 Tension is then released as long as the dog remains focused and in the sit position.



Figure 4.21 A wooden spoon with a tasty canned food or peanut butter (if no family allergies) can be used as a reward and distraction to help the pet accept the head halter when it is applied, as well as a lure to train a relaxed sit and “watch” behavior. (Courtesy of Oakland Veterinary Referral Service.)

less effective at controlling the muzzle and reorienting the dog to focus on the owner.

With a head halter, the owner can gain eye contact and reorient the dog to perform the desirable response. With the head halter properly fitted and the leash slack, the dog is not restricted from barking, panting, eating, drinking, or biting. On the other hand, since the halter encircles the head and muzzle, a pull on the leash can immediately curtail pulling, barking, chewing, stealing, stool eating, and even some forms of aggression. The head halter and leash can also be used to prompt the dog to respond to a cue (e.g., “quiet” for

barking, or “off” for puppy nipping, or “watch” to get the dog to focus on the owner and calm down) (Figures 4.18–4.21). Releasing the tension on the lead indicates to the dog that it is performing the desired behavior. With a 300-cm (10-foot) leash attached, the head halter provides the owner with a mechanism for interrupting and deterring undesirable behavior immediately (e.g., garbage raiding, jumping up, housesoiling). A longer lead can be used for outdoor training.

References

- Hunthausen W. Giving new puppy owners practical tips to curb unruly behavior can save lives. *DVM Magazine* 1990;July:29.
- Patronek GJ, Glickman LT, Beck AM. Risk factors for relinquishment of dogs to an animal shelter. *J Am Vet Med Assoc* 1996;209:572–81.
- Patronek GJ, Glickman LT, Beck AM, et al. Risk factors for relinquishment of cats to an animal shelter. *J Am Vet Med Assoc* 1996;209:572–81.
- Horwitz DF. Feline socialization: how environment and early learning influence behavior. *Vet Med-US* 1993;August:14–6.
- Markwell PJ, Thorne CJ. Early behavioural development of dogs. *J Small Anim Pract* 1987;28:984–91.
- Nott HM. Behavioural development of the dog. In: Thorne C, editor. *The Waltham book of dog and cat behaviour*. New York: Pergamon Press; 1992. p. 65–78.
- Freedman DG, King JA, Elliott O. Critical periods in the social development of dogs. *Science* 1961;1016–101.
- Scott JP. Critical periods in social development. *Science* 1962;949–58.
- Scott JP, Fuller JL. *Genetics and the social behavior of the dog*. Chicago: University of Chicago Press; 1965.
- Serpell J, Jagoe JA. Early experience and the development of behaviour. In: Serpell J, editor. *The domestic dog*. Cambridge: Cambridge University Press; 1995. p. 80–102.
- Collard RR. Fear of strangers and play behavior in kittens varied with social experience. *Child Dev* 1967;38:877.
- Appleby D, Bradshaw JWS. The relationship between canine aggression and avoidance behaviour and early experience. In: Overall K, Mills DS, Heath SE et al, editors. *Proceedings of the third international congress on veterinary behavioural medicine*. Herts, UK: UFAW; 2001. p. 23–29.
- Fox MW. Socialization, environmental factors, and abnormal behavioral development in animals. In: Fox MW, editor. *Abnormal behavior in animals*. Philadelphia: WB Saunders; 1968.
- Fox MW, Stelzner D. Behavioral effects of differential early experience in the dog. *Anim Behav* 1966;14:273–81.
- Angameier E, James WT. The influence of early sensory-social deprivation on the social operant in dogs. *J Genet Psychol* 1961;99:153–8.
- Serpell JA. The influence of inheritance and environment on canine behaviour: myth and fact. *J Small Anim Pract* 1987;28:949–56.
- Karsh EB. The effects of early and late handling on the attachment of cats to people. In: Anderson RK, Hart BL, Hart LA, editors. *The Pet Connection*. St. Paul: Conference Proceedings. Globe Press; 1983. p. 207–15.
- Karsh EB. The effects of early handling on the development of social bonds between cats and people. Philadelphia, PA: University of Pennsylvania Press; 1983. p. 22–8.
- Fox MW. *The dog: its domestication and behaviour*. New York, Garland: STM Press; 1978.
- Levine S. Maternal and environmental influences on the adrenocortical response

- to stress in weanling rats. *Science* 1967;156:258–60.
21. Simonson M. Effects of malnourishment, development and behaviour in successive generations of the rat and cat. In: Levinsky DA, editor. *Malnutrition, environment and behavior*. Ithaca: Cornell University Press; 1979.
 22. Latham NR, Mason GJ. Maternal deprivation and the development of stereotypic behaviour. *Appl Anim Behav Sci* 2008;110:84–108.
 23. Seksel K. Preventing behavior problems in puppies and kittens. *Vet Clin North Am Small Anim Pract* 2008;38:971–82.
 24. Seksel K, Mazurski EJ, Taylor A. Puppy socialisation programs: short and long term behavioral effects. *Appl Anim Behav Sci* 1999;62:335–49.
 25. Duxbury MM, Jackson JA, Line SW, et al. Evaluation of association between retention in the home and attendance at puppy socialization classes. *J Am Vet Med Assoc* 2003;223:61–6.
 26. Blackwell EJ, Twells C, Seawright A, et al. The relationship between training methods and the occurrence of behaviour problems as reported by owners, in a population of domestic dogs. *J Vet Behav* 2008;3:207–17.
 27. Denenberg S, Landsberg GM. Effect of dog-appeasing pheromones on anxiety and fear in puppies during training its effects on long term socialization. *J Am Vet Med Assoc* 2008;233:1874–82.
 28. Stepita M, Bain M, Kass P. Incidence of Parvovirus in puppies attending puppy socialization classes. St. Louis: Proceedings of the ACVB/AVSAB Scientific Session; 2011.
 29. Horwitz D, Landsberg G, Luescher A, et al. Enriching the environment of our pets: roundtable on the psychology of play and behavior modification. *Vet Forum* 2003;20:46.
 30. Hunthausen W, Seksel K. Preventative behavioral medicine. In: Horwitz D, Mills DS, Heath S, editors. *BSAVA manual of canine and feline behavioural medicine*. Gloucester, UK: BSAVA; 2002. p. 49–60.
 31. Leuscher A. Enriching the environment of our pets: the psychology of play and behavior modification. *Vet Forum* December 2002.
 32. Jongman EC. Adaptation of domestic cats to confinement. *J Vet Behav* 2007;2:193–6.
 33. Neville PF. An ethical viewpoint: the role of veterinarians and behaviourists in ensuring good husbandry for cats. *J Feline Med Surg* 2004;6:43–8.
 34. Ellis S. Environmental enrichment. Practical strategies for improving feline welfare. *J Feline Med Surg* 2009;11:901–12.
 35. Rochlitz I. A review of the housing requirements of domestic cats (*Felis silvestris catus*) kept in the home. *Appl Anim Behav Sci* 2005;93:97–109.
 36. Hall SL, Bradshaw JWS. The influence of hunger on object play by adult domestic cats. *Appl Anim Behav Sci* 1998;58:143.
 37. Adamec R, Stark-Adamec C, Livingston KE. The development of predatory aggression and defence in the domestic cat (*Felis catus*): III Effects on development of hunger between 180 and 365 days of age. *Behav Neural Biol* 1980;30:435–47.
 38. Biben M. Predation and predatory play behavior of domestic cats. *Anim Behav* 1979;27:81–94.
 39. Fitzgerald BM, Turner DC. Hunting behavior of domestic cats and their impact on prey populations. In: Turner DC, Bateson P, editors. *The domestic cat; the biology of its behaviour*. 2nd ed. Cambridge: Cambridge University Press; 2000. p. 151–75.
 40. Denenberg S. Cat toy play trial: a comparison of different toys. In: Proceedings of the Annual Scientific Symposium of Animal Behavior, Denver CO: 2003, p. 25–33.
 41. Hall SL, Bradshaw JWS, Robinson IH. Object play in adult domestic cats: the roles of habituation and disinhibition. *Appl Anim Behav Sci* 2002;79:263–71.
 42. Overall KL, Rodan I, Beaver BV et al. Feline behavior guidelines from the American Association of Feline Practitioners. *J Am Vet Med Assoc* 2005; 227:50–84.
 43. Rooney NJ, Bradshaw JWS. An experimental study of the effects of play upon the dog-human relationship. *Appl Anim Behav Sci* 2002;75:161–76.
 44. Simpson B, Neilson J, Landsberg G, et al. Enriching the environment of our pets: the psychology of play and behavior modification. *Vet Forum* December 2002.
 45. Turner D. The human-cat relationship. In: Turner DC, Bateson P, editors. *The domestic cat; the biology of its behavior*. 2nd ed. Cambridge: Cambridge University Press; 2000. p. 193–2006.
 46. Mertens C, Shar R. Practical aspects of research in cats. In: Turner DC, Bateson P, editors. *The domestic cat; the biology of its behavior*. Cambridge: Cambridge University Press; 1988. p. 179–90.
 47. Yin S. Low stress handling, restraint and behavior modification of dogs and cats: techniques for developing patients who love their visits. CA: Nerd Books, Davis; 2009.
 48. Landsberg GM. Confinement training. *Vet Pract Staff* 1993;5:19–22.
 49. Milani MM. Crate training as a feline stress reliever. *Feline Pract* 2000;28:8–9.
 50. Pauli AM, Bentley E, Diehl KA, et al. Effects of the application of neck pressure by a collar or harness on intraocular pressure in dogs. *J Am Anim Hosp Assoc* 2006;42:207–11.

Recommended reading (also see Appendix B)

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| <p>Beaver BV. <i>Feline behavior: a guide for veterinarians</i>. 2nd ed. St. Louis, MO: Saunders, Elsevier; 2003.</p> <p>Beaver BV. <i>Canine behavior: insights and answers</i>. Philadelphia, PA: Saunders, Elsevier; 2009.</p> <p>Crowell-Davis SL, Curtis TM, Knowles RJ. Social organization in the cat; a modern understanding. <i>J Feline Med Surg</i> 2004;6:19–28.</p> <p>Donaldson J. <i>The culture clash</i>. Berkeley, CA: James and Kenneth Publishers; 2005.</p> <p>Dunbar I. <i>Before and after getting your puppy</i>. New World Library. Available online at: www.dogstardaily.com 2004.</p> <p>Ellis S. Environmental enrichment: practical strategies for improving welfare. <i>J Feline Med Surg</i> 2009;11:903–12.</p> | <p>Landsberg GM, Horwitz DE, editors. <i>Practical aspects and new perspectives in veterinary behavior</i>. <i>Vet Clin North Am Small Anim Pract</i> 2008;38:937–1171.</p> <p>Miklosi A. <i>Dog behavior, evolution and cognition</i>. Oxford: Oxford University Press; 2007.</p> <p>Ohio State University. Indoor pet initiative. Available online at: www.indoorpet.osu.edu.</p> <p>Overall KL, Rodan I, Beaver BV, et al. Feline behavior guidelines from the American Association of Feline Practitioners. <i>J Am Vet Med Assoc</i> 2005;227:50–84.</p> <p>Pryor K. <i>Reaching the animal mind – clicker training and what it teaches us about all animals</i>. New York: Scribner Book Company; 2009.</p> | <p>Pryor K. <i>Don't shoot the dog; the new art of teaching and dog training</i>. Gloucestershire, UK: Ringpress Books; 2002.</p> <p>Rochlitz I. A review of the housing requirements of domestic cats (<i>Felis silvestris catus</i>) kept in the home. <i>Appl Anim Behav Sci</i> 2005;93:97–109.</p> <p>Serpell J, Barrett P, editors. <i>The domestic dog: its evolution, behavior and interactions with people</i>. Cambridge: Cambridge University Press; 1996.</p> <p>Turner DC, Bateson P, editor. <i>The domestic cat; the biology of its behavior</i>. Cambridge: Cambridge University Press; 2000.</p> |
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Behavior counseling and behavioral diagnostics

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Causes of behavior problems

Knowledge of medicine, health, and pathology provides an important dimension for the veterinarian working with companion animal behavior problems. Prior to performing the actual behavioral consultation, it is critical that a thorough physical examination with appropriate diagnostic testing be done to rule out underlying medical conditions. For example, using behavioral modification alone for a cat with housesoiling is counterproductive if there is a urinary tract disorder or diabetes mellitus. The various categories of medical conditions that might lead to behavioral signs are discussed in [Chapter 6](#).

Presenting signs may arise as a result of a disease process, primary behavior problems, or some combination of these factors. Signalment should be considered when determining which medical problems could be contributing to the behavioral signs. Congenital conditions might be more common in young pets, while a range of medical problems, including endocrinopathies, arthritis, alterations in the immune response, sensory decline, neoplasia, and age-related organ dysfunction (including brain aging), are more common with increasing age.^{1,2} Medical conditions in senior pets and their potential effects on behavior are discussed in [Chapters 6 and 13](#).

Another important reason for physical examination and screening tests is to establish a baseline prior to the use of any pharmacologic therapy and to ensure that there are no contraindications for using the medication(s) being

considered. In general, the minimum assessment that should be collected for most behavior problems would be a physical examination, hemogram, biochemical profile, urinalysis and, where indicated, endocrine screening tests to rule out thyroid disease and diseases of the hypothalamic–pituitary–adrenal axis.

The presence of a medical problem does not necessarily mean that it is the cause of the behavioral signs. For example, a cat with a positive feline leukemia virus test might be aggressive or spraying for reasons independent of its positive viral state. Genetic, medical, and environmental effects could also contribute to a state of behavioral pathology, where neurotransmitter dynamics have been altered.

Undesirable behavior or abnormal behavior

In the absence of a medical cause, most behavioral problems are a result of the owner's inability to manage and control an otherwise normal behavior. Some examples of normal but unacceptable behaviors might include guarding toys and food, protective aggression toward visitors to the household, digging, chewing, and intraspecies aggression. Abnormal behaviors are those that are considered dysfunctional. They may be associated with extreme anxiety, may be out of context or inappropriate with respect to the stimuli, or may be excessive, uninhibited, or impulsive. These types of problem can be due to inherited factors, the effects of endogenous factors (endocrine, metabolic, inflammatory, immunological, and aging changes) and exogenous factors (such

as the effects of deprivation or repeated or chronic exposure to situations of stress, anxiety, or conflict). Compulsive disorders, excessive fear, panic and phobias, aggression arising from dyscontrol or lack of inhibition, and learning deficits associated with hyperactivity are abnormal behaviors or mental health disorders. In these cases, altered neurotransmitter and receptor function, may be present and drug therapy may be a necessary part of the therapeutic program.

Families require education as to what is normal canine and feline behavior. They also need to know how these problems can best be managed using behavior modification, learning principles, and environmental management.

Preparation before the session

Since behavior counseling requires a knowledge and understanding of a wide variety of problems, it is seldom practical to perform a behavioral consultation without some advance preparation. Gathering information can be very time-consuming work. It is therefore advisable to request that the family fill out a history questionnaire so you can use this information to research the problem thoroughly before the counseling session. Using a history questionnaire will facilitate collection of data, keep information together so it can be readily referenced during follow-ups, and help the consultant avoid overlooking important questions. It is advantageous to have the questionnaire filled out and returned at least 48 hours prior to the consultation time, so that you have adequate time to review it beforehand. The 48-hour return policy also helps with the appointment schedule. When your receptionist notes that a form has not been returned in a timely manner (forgetful owner or cancellation without notification), a call can be made as a reminder, and if there is a cancellation the appointment time can be freed.

The behavior data sheet questions should explore a wide variety of pertinent information. You can design your own forms using the outline in [Table 5.1](#) as a guideline/checklist (form 18 printable from web), or you can use the forms that accompany this book (see [Appendix C](#), form C.5, client form #3, printable version available online) and 2 more comprehensive questionnaires, one for dog cases (form 19) and one for cat cases (form 20) which have not been printed within the text but are available as printable version online. There are many other such forms available for this purpose, including those at www.sabs.com.au, westwoodanimalhospital.com and www.northtorontovets.com. If you design your own forms, be certain to include questions that address all aspects of the pet's health and behavior, since the primary complaint may be only one sign of a more complex health or behavioral problem.

It is advisable to counsel and inform clients about simple behavioral concerns during their regular veterinary visits. However, for more involved problems it is best to schedule a separate appointment. This will allow the practitioner to spend an adequate amount of time discussing the problems rather than hurriedly trying to collect information and give treatment recommendations during a medical visit. Tackling more difficult problems, such as aggression or complex phobias, is best reserved for behavioral specialists or those veterinarians who have already acquired significant experience in behavior counseling. If you feel uncomfortable with

your ability to handle some cases, consider referring them, or set up your own telephone consultation with a behavior referral center. Veterinarians should not attempt to counsel cases beyond their abilities. Incomplete, insufficient, or inaccurate advice could lead to worsening of the problem, injuries, liability, and loss of the client's confidence.

Scheduling the behavior consultation

Behavior consultations are like medical consultations in that there rarely are quick fixes you can offer to mend a long-standing problem. A significant amount of time is required to diagnose the problem, determine the prognosis, formulate a safe and effective treatment plan, and present the treatment plan so that the owners can fully process the information and make informed decisions about committing to an action plan. A consultation requires the time and commitment of both veterinarian and client. An action plan cannot be determined until all factors related to the pet's health, the problem, the level of risk or danger, the environment, the family, and the owner's commitment to proceed have been assessed. Rarely is it possible to offer any meaningful behavioral advice for a difficult problem during a 15–20-minute routine office visit. Schedule 1–2 hours for the initial interview. Whenever possible, have all members of the family present. See [Chapter 1](#) for a discussion of the economics of behavior visits.

There are also considerations as to where the behavior consultation should take place. Since the history with respect to the environment can be an important component for some problems, a house call can be a practical way to assess first-hand where the pet lives, how it is housed, and the role that the environment might play in the management of the problem. However, a house call may be impractical for some practitioners and costly for clients, and may not have a significant impact on success if the consultant has good history taking skills. The advantages and disadvantages of each are discussed in [Table 5.2](#).

The behavioral and medical history

An accurate diagnosis of the cause of any behavioral sign can only be made by observing the pet and assessing the behavioral history, the medical history, and the results of any laboratory tests that might be indicated by the history and physical examination. The examination should assess all organ systems, but in particular the nervous system, since any alterations in mentation or gait, and any cranial nerve deficits, might be indicative of a primary neurologic condition.

Behavioral history

Taking the behavioral history is the heart of companion animal behavior therapy. It usually takes between 30 and 90 minutes to complete, depending on the complexity of the situation. Complicated cases can require hours of information collecting. The consultant needs to have good information-collecting skills in order to pull together the necessary information. As many family members, caretakers,

Table 5.1 Basic information checklist for history collection – This can be used as a guide for history collection (printable form 18 from web)

Family information	• Home, apartment
	• Rural, urban
	• Family size, ages, schedules
	• Physical/mental challenges or limitations
	• Experience with pets
	• Other pets in the home
Pet information	• Signalment
	• Age at adoption
	• Source of pet, when obtained, previous owner information if known, why it was adopted
	• Personality, temperament
	• Medical history (medications administered, any recent or pertinent laboratory tests)
	• Medical/behavioral information about parents, siblings, or littermates
	• Diet, including type of food and frequency, treats fed, who feeds, behavior around food
Training	• Methods used
	• Types of training tools used
	• Confinement training
	• Reward use and the pet's response
	• Punishment use and the pet's response
	• Training methods and results
	• Use of behavior modification devices (and pet's response)
	• Use of control devices (e.g., head halter) and pet's response
Pet's environment, lifestyle, and daily schedule	• Pet's housing, where it stays during the day, night, and when the family is gone
	• Elimination areas, feeding areas, scratching or play areas
	• Access to outdoors through pet door
	• Play and exercise routines
	• Favorite toys
	• When and how long it is left alone
	• Time indoors and outdoors
	• Family members who care for the pet
Reactions to people and animals	• Family members
	• Unfamiliar people
	• Other pets in the household
	• Unfamiliar animals
	• How does the pet react to other animals and nonfamily members on property and off property?
	• Social postures, vocalizations, interactions, approach behaviors, fear, aggression
Response to handling	• Bathing, nail trimming, grooming, petting
Primary problem	• 5 Ws:
	1. What happens?
	2. Where does it happen?
	3. When does it happen?
	4. Who is present (people, animals)?
	5. Why does the family think the behavior occurs?

Continued

Table 5.1 Basic information for a behavior data sheet—cont'd

	• Initial circumstances. Can the owner identify any events that might have caused the problem?
	• Environmental changes preceding appearance of problems
	• Duration
	• Frequency
	• Stimuli that trigger the behavior
	• Change in appearance
	• Treatment attempted and pet's response
Additional problems	• Are there any behavior problems that are separate from the principal problem?

Table 5.2 The advantages and disadvantages of different locations for behavioral consultations

Location	Advantages	Disadvantages
Clinic visit	• Ability to see the pet and family members	• Don't see environmental components
	• Distractions can be minimized	• Pet's behavior may be dramatically altered in the clinic
	• Can utilize clinic resources (staff, videos, books, handouts)	
House call	• Can see the environment and problem at first hand	• Presence of the veterinarian may alter the behavior
	• Increased investigator awareness of varying home environments	• Time-consuming and expensive
		• May be interruptions and distractions
Remote consultation (telephone, fax, internet)	• Increased accessibility	• Staff and resources not available
		• Cannot observe or examine animal
		• Cannot learn as much about owner
		• Must rely much more on the history
		• History and questionnaire will need to be far more comprehensive
		• No opportunity to demonstrate techniques, products, literature
		• Questionable doctor–client–patient relationship

or acquaintances of the pet as possible should be present during the consultation. This is important for two reasons: it helps ensure that you gather the most information, and it is advantageous to have everyone involved with the pet hearing the same instructions at the same time. It is helpful to have a behavior data sheet or history form completed by the family and returned prior to the actual consultation. This allows you to have some idea of what to expect. This can be especially important when dealing with very aggressive pets.

It is important to keep in mind that the goal of history taking is to obtain sufficient information to aid in the diagnosis, prognosis, and treatment plan. To do this, the consultant must get an accurate description of all pertinent aspects concerning the pet, the family, the environment, and the behavior problem. The process of obtaining information should be structured enough to avoid missing critical facts, but flexible enough to allow the interviewer and family to pursue novel lines of thought that might reveal unforeseen information. The family should be guided through various areas of importance without actually being led towards certain answers.

Oftentimes, the family comes into the consultation a bit apprehensive, not knowing what to expect. It is important to show understanding and compassion. You'll have a better chance of gathering a complete history if you are warm and

take an understanding interest in the family's problems, rather than coolly and clinically collecting facts. Do your best to include the whole family in the discussion, so that all dimensions of the problem can be explored. You will also get a better idea of everyone's emotional investment in the pet as well as their commitment to solving the problem.

The demeanor of the consultant can be extremely important in determining the quality and amount of information obtained. The interviewer should strive to be friendly and open. Appropriate smiles, eye contact, and gestures of understanding are usually helpful in gaining trust. Leaning in with relaxed arms and hands sends signals that encourage communication, while leaning back with arms and legs crossed suggests you are less open to listening and may be more critical. In some cases, the interviewer can help the family relax by showing an appropriate sense of humor.

Many pet owners feel vulnerable discussing personal details about the family and the pet. Some may feel a sense of failure that they are unable to correct the pet's problems without professional help. So, it is very important to remain nonjudgmental. An indiscreet comment, facial expression, or body gesture can quickly inhibit communication and close your access to important facts. For example, owners frequently use particular correction methods that are not only inappropriate, but may actually have contributed to the

problem. Inconsiderate comments about their behavior may make them uncomfortable, so that they are less likely to be forthcoming with other pieces of important information. You will get better cooperation if you convey to owners that “There may be better methods to get the job done,” rather than telling them “What you did was wrong.” As you might imagine, good consultants should have as much knowledge about human body language and communication as they do about animal body language and communication.

One of the problems encountered during history collection is that clients often provide information that is overly subjective or anthropomorphic. When the owners say that the pet was mad, jealous, upset, or unhappy, the consultant must ask exactly what was observed that brought them to that conclusion. As you progress through the interview, terms may need to be defined for the client. You can’t take for granted that you and the family are talking about the same thing when it comes to behavioral terms. For example, aggression might mean a snarl or growl to some owners, while others only consider the dog aggressive if it exhibits a full-blown attack. In other cases, you might find that family members refer to any type of urination outside the litterbox as “spraying.”

Information needs to be collected about: (1) the family and environment; (2) the pet; and (3) the problem itself. For a checklist for history collection see [table 5.1](#) (printable as form 18 online).

For a sample canine and feline history form, see [Appendix C](#), form C.5 (client form #3, printable version available online) as well as a more comprehensive canine questionnaire (Form 19) and feline questionnaire (form 20) available as printable versions online.

The family and environment

Information needs to be collected about the family and the environment in which they live. You’ll want to know if they live in a house or an apartment, as well as whether the area is rural or urban. Find out about the yard, how big it is, and what kind of fencing is present. Ask about the type of animal and human foot traffic that passes nearby. For urine marking, feline redirected aggression, or territorial aggression problems, you should ask if stray animals frequently visit the yard.

Aspects about the family, such as number of members, ages, and schedules, can be important. For example, a large, busy family may not be providing enough supervision, exercise, or attention for a young dog that is destructive. The age, as well as mental and physical capabilities, of family members can influence the treatment plan, as well as the risk of danger in aggression cases. Find out if family members are experienced or naïve about raising dogs and cats. Knowing the primary caretaker(s) for the pet can help you make the decision about who will be assigned training responsibilities. Determine the family’s daily schedule and whether the problem consistently occurs at a specific time in relation to this routine. Changes in the home environment or in the owner’s schedule can contribute to the development of some behavior problems and should be discussed, exploring in particular how the changes affected the pet. Find out about what other pets are in the family and how they interact. If the problem only occurs when no family members are

present, the pets may need to be separated to determine for sure which one is the perpetrator. You may also want to explore whether previous family pets have been euthanized or abandoned due to behavior problems, and if the problems were similar to the present ones.

The pet

Consider the signalment of the pet, including the sexual status (male versus female; intact versus neutered). Some behavior problems are more likely to be seen at certain ages. For example, a 3-month-old pet that is biting is more likely to be playing, while a 3-year-old pet that bites probably has a more serious problem. Even the name of the pet can be an important piece of information. If the Young family tells you their miniature schnauzer is named “Harold Young,” you gain some insight into the family’s relationship with the pet. Another way of getting similar information is by asking the family to describe the pet’s personality. Basic information about why, when, and where the pet was adopted, as well as how old it was when adopted may also be important. If possible, find out if any related pets had similar problems.

Ask the family to describe how the pet spends an average day. Find out where it is kept when they are home, away, or sleeping, as well as where the pet spends time when friends visit. If it is confined away from guests, you need to find out why this is done. In most cases, the pet is separated from visitors because of some problem with the pet’s behavior. Enquire about how much exercise the pet gets. Does it have favorite toys? Does it play with them? When and what does it eat? Was there a change in diet and if so, why? You’ll want to enquire about the social nature of the pet, including how it gets along with other pets, and whether it is relaxed, nervous, or aggressive when it meets unfamiliar people. You will also want to find out about the type and success of training, the tools used for training, and to what commands the pet will respond.

Behavior issues with an underlying medical etiology are unlikely to be resolved unless the medical problem is successfully diagnosed and treated. The medical history can be very important in some cases that involve aggression, house-soiling, and cognitive dysfunction. The owners of pets that are aggressive when reached for or touched should be queried about any painful medical problems the pet might have. If the pet housesoils, you need to know if there is anything abnormal about the act of elimination or the appearance of the pet’s stool and urine. You’ll also want to find out what medications the pet is receiving or has received since some may cause behavior and personality changes.

The problem

When asking about the behavior problem, remember the “five Ws.” (1) What occurs? (2) Where does it occur? (3) When does it occur? (4) Who is present when it occurs? (5) Why do you think the pet does it? Ask the family for a complete description of the problems, including when they first appeared and how long they have existed. Ask for a description of the initial circumstances during which the problem was first noted. You should get a detailed account of exactly what the pet does. You will want to know when, where, and during what time period they are most likely to

occur, and who is present. It's important to identify all stimuli that precede or trigger the behaviors. When working up an aggression case, you will want the family to make a list of everything that makes the pet act either aggressive or anxious. You will also want descriptions of facial expressions and body postures preceding, during, and following aggressive incidents.

Explore the sequential development of the problem to understand better what is going on and how things have progressed. Begin with the most recent incident, which should be freshest in the family members' memories, and then ask them sequentially to go back in time, describing the details of each instance of problem behavior. Alternatively, they can be asked to begin with the first incident and progress to the present. Find out if there were any changes in the pet's environment or in its interaction with family members just prior to the appearance of the problems, and what was the pet's general response to these changes. Ask about the frequency of the problem behaviors and whether there has been a change in frequency. If there has been some change, find out why. When a problem occurs sporadically without any apparent stimulus, it may be helpful for the owner to keep a diary that lists the date, day, time, description of the problem, as well as anything of interest associated with the occurrence of the problem.

The family should describe all methods that have been used in an attempt to correct the problem behaviors, and what results were seen. If they mention that an approach you are considering has not worked, be sure to get details about exactly what the family did in case the technique simply was not applied correctly. Asking questions about punishment should be done carefully. If you ask, "Have you ever hit the pet to correct the problem?" an owner might be reluctant to admit this and respond, "No." It may be better to ask in a matter-of-fact way, "What forms of correction have you used?" Finally, be sure to explore any behavior problems the pet might have beyond those for which it was presented. For example, it would be important to know that a pet displaying fear-related aggression is also housesoiling. This could be helpful information to pursue because the family might be frustrated with the housesoiling, using harsh punishment and, therefore, contributing to the fear-related aggressive behavior.

Medical history

The medical history should focus on those signs that might be indicative of a pathologic process or a chronic state of anxiety, such as tachycardia, tachypnea, salivation, gastrointestinal disturbances, skin disturbances, self-injurious behavior, and stress or excitement-induced elimination. Increased drinking and urination, a change in appetite (increased or decreased), obesity, marked weight loss, alterations in grooming, diminished responsiveness to stimuli, and changes in sleep pattern could all be indicative of more generalized behavioral or medical disorders. Behavioral changes such as aggressiveness, altered sexual, maternal, or exploratory behaviors, decreased learning ability, decreased performance or a decline in cognitive function, a loss of self-control, and unpredictable or excessive responses to stimuli should be considered in combination to diagnose the underlying problem accurately.

The behavioral consultation

The protocol for each behavior case involves determining all factors that may have caused the problem or may be maintaining the problem, making a diagnosis, determining the prognosis, developing an appropriate treatment plan for the pet and the home, and following up to assess progress and to modify the program (and prognosis) as needed. [Figure 5.1](#) shows the sequence of events from the initial consultation to the treatment plan.

Diagnosis

The diagnosis is based on the patient history, observation of the pet, physical examination, and any diagnostic testing performed. It is made by matching this information with criteria for a specific behavior problem. Diagnostic tests may be needed to rule out organic causes for the problem. Although medical abnormalities are less likely causes of most primary behavior problems, it is always important to assess all patients thoroughly for medical problems before rendering a diagnosis or treatment plan. During a behavior consultation there is the opportunity to observe and interact with the pet for an extended period of time. Observations of the pet from previous visits as well as from any video provided can also give important diagnostic information. A temperament evaluation form such as the one in [Appendix C](#), form C.7 (client form #15, printable version available online) can be used to help collect data during consultations.

Occasionally, the consultant may have to rely on potentially unreliable information from an emotionally involved owner who may view the pet a bit too anthropomorphically and who may not have been present when much of the undesirable behavior occurred. This can make a firm diagnosis difficult in some cases and impossible in others.

Prognosis

After historical information has been collected and a diagnosis has been made, the consultant must give some thought to the prognosis. Predicting the outcome of behavioral therapy and estimating time and treatment costs is an essential part of the consultation and provides important information for the family. The prognosis may determine whether the pet will be treated or removed from the home. Factors that contribute to the ultimate prognosis include the pet itself, the owners, the environment in which the pet lives, the type and extent of the problem, the consultant's skills, and whether a corrective program can be implemented safely and practically for the problem at hand ([Table 5.3](#)).

The temperament and signalment of the pet must be appraised. If the pet's temperament varies significantly from the norm, such that intense degrees of fear or aggression are exhibited, the chances for a successful outcome are lessened. Problems that develop because of early social deprivation may be extremely difficult to overcome. If the behavior is significantly influenced by sexual hormones and the pet is not (and will not) be neutered, you can expect that the prospect for a good prognosis will be diminished. Behaviors that are especially typical for the species or breed may be more difficult to eradicate since the frequent appearance of

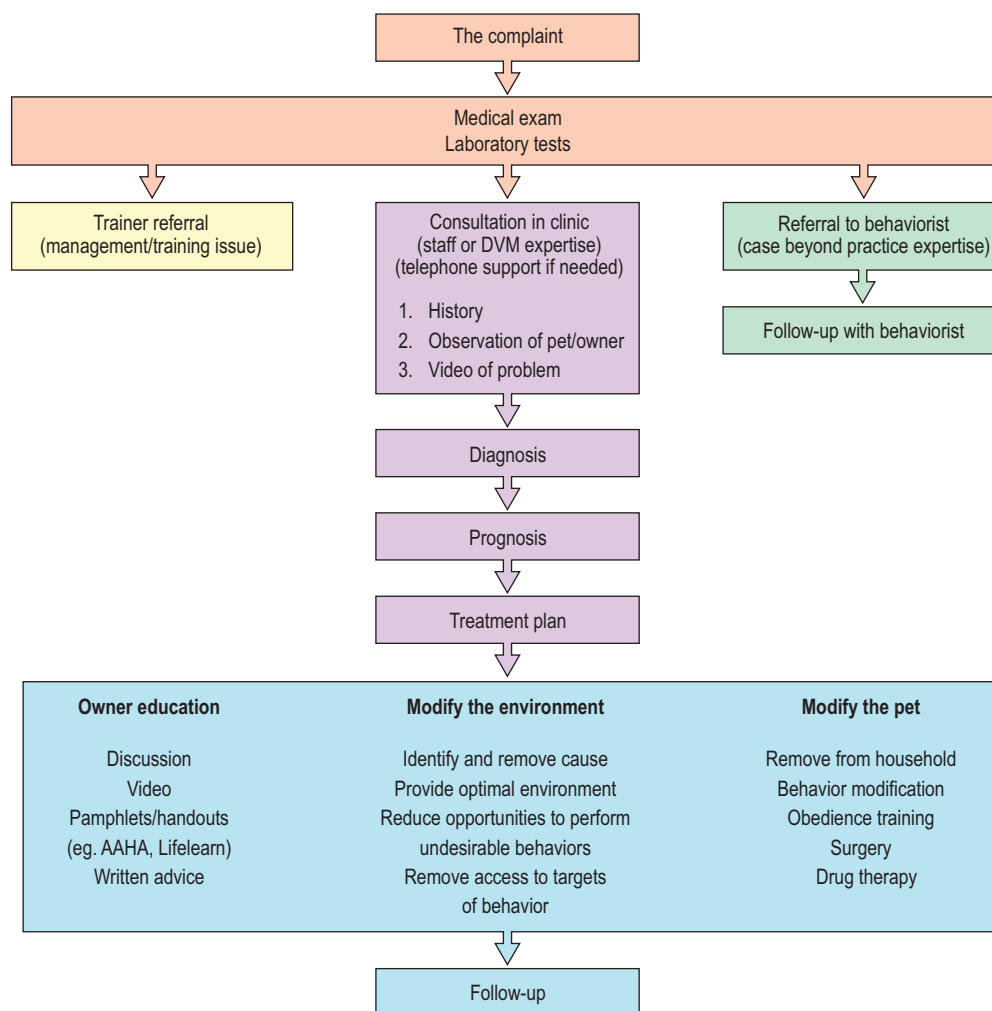


Figure 5.1 Flowchart for a behavior consultation. DVM, doctor of veterinary medicine; AAHA, American Animal Hospital Association.

Table 5.3 Prognostic considerations

Better prognosis	More guarded or grave prognosis
• The problem can readily and accurately be diagnosed	• The problem or cause of the problem is poorly understood
• All stimuli can be identified, controlled, or removed	• Inability to identify, control, or remove initiating stimuli
• Mild problem of short duration	• Severe or advanced problem of long duration
• Predictable behavior	• High or unpredictable frequency
• Low motivation for the behavior	• Very strong motivation to perform behavior
• Low level of arousal, easy to get the pet's attention and interrupt	• High level of arousal, difficult to interrupt
• Conditioned behavior problem	• Strongly innate factors, type of behavior is common for the species or breed
• Simple, single problem	• Complex, multiple problems
• Historically, a good prognosis for the diagnosed problem	• The type of problem responds poorly to conventional therapy
	• Appropriate correction techniques have been attempted, but were unsuccessful
• Risk assessment: minimal risk of injury	• Injury risk is moderate to high and cannot be sufficiently managed
	• History of uninhibited behavior and severe damage
• Commitment and ability of family members are high, family communicates well	• Inability or unwillingness of owners to treat
	• Complex family situation, poor family communication
	• Weak bond with pet
	• Desire of family to remove pet from household
• Good understanding and ability to follow necessary correction techniques	• Owners unable to generalize prevention or treatment techniques to similar situations
	• Owners cannot comprehend nature of problem or principles of treatment

behavior in a related group of individuals suggests a possible genetic component.

The type of problem itself may dictate how easy or difficult it will be to resolve. Normal behaviors and learned behaviors are more easily treated than abnormal (e.g., compulsive disorders, psychomotor epilepsy) or innate behaviors (e.g., predation). The prognosis might be somewhat improved when a drug is available that historically has been helpful for treatment. The complexity of the situation is another factor to consider. A pet with a single behavior problem has a better chance of being successfully treated than one with multiple problems. Problems that have existed for a relatively short time without worsening merit a better prognosis than those with a long duration that have been progressively getting worse. Problems involving fear or aggression that involve very high levels of arousal have a guarded prognosis. The frequency of occurrence can affect a case in different ways. Behaviors that occur very frequently often develop into habits that are difficult to obliterate. However, problems that have been occurring at a low frequency can also be problematic. For example, some destructive problems occur so infrequently that uncovering the exact cause(s) for the behavior can prove to be very difficult and the prognosis remains guarded.

The environment in which family members live, as well as their ability to control or modify that environment, can be important. Treating territorial aggression will be difficult if the pet is chained in the yard next to a busy sidewalk all day. The prognosis for safe resolution of aggression directed toward family members is better if there are no children or irresponsible adults in the home. The prognosis for resolving a urine-spraying problem is better if neighborhood cats can be prevented from entering the yard. The inability to control sudden onset of severe storms makes treatment of thunderstorm phobias more of a challenge.

Many aspects about the family have an important impact on the prognosis. Success is more likely if the family has a strong commitment to the pet and a good record in following through with instructions (e.g., obedience training, medical treatments, and so on). For many problems, the more control the family has or can establish over the pet, the better the prognosis. If the family has unrealistic goals or if there is poor cooperation, the chances for satisfactory resolution are reduced. The family must have the aptitude to understand the conditions influencing the existence of the problem and the basic principles of the treatment program. The physical size and assertiveness of family members may be important for some cases. For example, a small, passive person is more likely to have problems with a large, assertive pet, while a large, assertive family member with little patience will likely compromise the treatment of a fearful cat, or a dog that urinates submissively. Chances for injury are higher (risk assessment) when the family is composed of individuals who are unable to understand or unwilling to comply with safety recommendations (e.g., young children, physically challenged, individuals with learning disorders, elderly, teenagers). The therapist must consider all characteristics of the family in order to make recommendations that are the most practical for the home situation.

Finally, the attributes of the therapist also play a role in contributing to the prognosis. The therapist's level of skill, familiarity with the type of problem, ability to communicate,

and compatibility with the pet and its family can all influence the outcome of the treatment program.

For some households it is not practical to improve the pet's problem to the satisfaction of all parties concerned. In these cases, the owners and consultant will need to determine whether the pet can remain in the home, or whether the best option is to remove the pet from the household. In some cases, it might be possible to find a more suitable home for the pet, but when there is a risk of injury, when the pet is "suffering," or when an appropriate alternative home cannot be found, euthanasia may need to be considered.

Treatment of behavior problems

The treatment of behavioral problems utilizes a variety of approaches to modify either the pet's behavior or the environment to suit the needs of the family and pet better. Understanding which treatment protocols fit which problems is important, but the real art in treating companion animal behavior problems involves choosing the ones that have the best fit for the individual pet and family. Once the plan is presented, the family then need to decide if such a plan is safe, practical for the home, family, and lifestyle, and within their budgets and capabilities. It is critical that the family understands all the options and alternatives at this time. Some families may decide that addressing the problem is more than they can manage, and elect to rehome (find a replacement home), euthanize, or abandon the animal.

If the case involves aggressive behavior, consider a liability release form before making treatment recommendations (see [Appendix C](#), form C.12, client form #1, printable version available online).

The following treatment techniques are discussed in detail elsewhere in the book:

Chapter 6

- pain management.

Chapter 7

- education of the family – what the problem is, why it has developed, what might be achieved, the limitations on what might be accomplished, and the treatment options
- modification of the environment
- behavior modification
- behavior management aids/products
- surgery

Chapter 8

- drug therapy

Chapter 9

- alternative therapy

Chapter 10

- dietary considerations

Follow-up

Another important opportunity for educating and interacting with the family occurs during the follow-up. It is essential that the consultant continues to monitor each case to be

sure that the family is correctly following treatment recommendations, and that the case is progressing as expected. This also provides an opportunity to gather more information about the situation in general. This is particularly important when there are multiple treatment options and the initial diagnosis was tentative. When drugs have been discussed or dispensed, regular follow-up is essential. For some cases, additional diagnostic tests and owner information will be required following the initial consultation, so that a formal follow-up telephone call or session may need to be scheduled. For most cases, initial follow-up contacts at 2, 4, and 12 weeks will provide good assessment of progress. The actual frequency will depend on the type of problem, the family, and the pet (see [Appendix C](#), form C.8, client form #9, printable version available online).

Behavioral medicine: the Pageat approach

The French or Pageat approach to behavioral medicine, as ascribed to by Dr. Patrick Pageat, differs from the approaches in most other geographic regions in that there have been many different forms of behavioral pathology proposed that may be linked to alterations in neurotransmitter systems.

These behaviors are considered pathologic when they lose their plasticity and their adaptive function and are no longer capable of returning to equilibrium or homeostasis at the end of the action. In his book *Pathologie du comportement du chien*, Dr. Pageat, a French behaviorist, classifies behavioral disorders by paying close attention to both the behavioral and somatic signs, and the age at which they arise.³ Behaviors should not be considered separately but rather categorized together with other presenting signs into syndromes. The pet may fall into one of a number of pathological states, including pathological emotional states, phobias, and pathological anxiety, pathological states concerning mood, acute and chronic depression, mood instabilities, and the state of instrumentalization. Drugs are then selected to treat the neurotransmitter system that might cause these groupings of signs and are utilized along with behavioral therapy. Throughout this text, with the aid of Dr. Pageat, we have attempted to describe some of his diagnostic and treatment protocols. Pheromone therapy is discussed in [Chapter 9](#). Specific considerations for stereotypic behavior are discussed in [Chapter 11](#), and Dr. Pageat's approach to geriatric behavior is integrated into [Chapter 13](#). Dr. Pageat reviews additional details of his approach to diagnosis and treatment of dogs in [Chapter 22](#).

References

1. Bamberger M, Houpt KA. Signalment factors, comorbidity, and trends in behavior diagnoses in dogs: 1644 cases (1991–2001). *J Am Vet Med Assoc* 2006;229:1591–601.
2. Bamberger M, Houpt KA. Signalment factors, comorbidity, and trends in behavior diagnoses in cats: 736 cases (1991–2001). *J Am Vet Med Assoc* 2006;229:1602–6.
3. Pageat P. *Pathologie du comportement du chien*. 2nd ed. Maisons-Alfort, France: Le Point Veterinaire; 1998.

Recommended reading

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| <p>Ackerman L. Five-minute veterinary practice management consult. Ames, Iowa: Blackwell Publishing; 2007.</p> <p>Bowen J, Heath J. Behaviour problems in small animals. Philadelphia, PA: Elsevier; 2005.</p> <p>Dannerman PJ, Chodrow RE. History taking and interviewing techniques. <i>Vet Clin North Am Small Anim Pract</i> 1982;12:587–92.</p> <p>Heath S. Commonly encountered feline behavior problems. <i>Vet Q</i> 1994;16(Suppl. 1):S51.</p> <p>Hunthausen W. Collecting the history of a pet with a behavior problem. <i>Vet Med</i> 1994a;89:954–9.</p> <p>Hunthausen W. Identifying and treating behavior problems in geriatric dogs. <i>Vet Med</i> 1994b;89:688–700.</p> | <p>Knol BW. Social problem behavior in dogs – etiology and pathogenesis. <i>Vet Q</i> 1994;16(Suppl. 1):S50.</p> <p>Kohlke HU, Kohlke K. Animal behavior therapy – characteristics and specific problems from the psychological point of view. <i>Kleintierpraxis</i> 1994;39:175–80.</p> <p>Lieberman DA. Learning, behavior and cognition. 2nd ed. Pacific Grove, CA: Brooks/Cole; 1993. p. 134–43, 227–233, 315–357.</p> <p>Polsky RH. The steps in solving behavior problems. <i>Vet Med</i> 1994;89:504–7.</p> <p>Reisner I. The pathophysiologic basis of behavior problems. <i>Vet Clin North Am Small Anim Pract</i> 1991;21:207–24.</p> <p>Reisner IR, Erb HN, Houpt KA. Risk factors for behavior-related euthanasia among dominant-aggressive dogs: 110 cases</p> | <p>(1989–1992). <i>J Am Vet Med Assoc</i> 1994;205:855–63.</p> <p>Seibert LM, Landsberg GM. Diagnosis and management of patients presenting with behavior problems. In: <i>Vet Clin Small Anim Pract</i> 2008;38:937–51.</p> <p>Voith VL. Interview forms. In: Voith VL, Borchelt PL, editors. Readings in companion animal behavior. Trenton, NJ: Veterinary Learning Systems; 1996.</p> <p>Voith VL, Borchelt PL. History taking and interviewing. <i>Compend Continuing Educ Practicing Vet</i> 1985;7(5):433.</p> <p>Voith VL, Borchelt PL. (update by Debra F Horwitz) History-taking and interviewing. In: Voith VL, Borchelt PL, editors. Readings in companion animal behavior. Trenton, NJ: Veterinary Learning Systems; 1996.</p> |
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Is it behavioral, or is it medical?

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Based on the clinical signs and behavioral history for each behavior case, all possible medical causes for the presenting signs should be ruled out first before considering a problem to be behavioral in nature. In [Chapter 5](#) we looked at behavioral diagnostics, which primarily focuses on history and observation of the patient (directly and by video). In this chapter we will focus on the role that health and stress play in the development of behavior problems.

A physical examination and diagnostic tests that are appropriate for the presenting signs are essential components of each behavior case. For example, blood, urine, and possibly urinary tract imaging may be needed to determine if there are medical causes in a pet that is housesoiling. Pets with self-traumatic disorders require a comprehensive dermatologic evaluation which might include skin scrapings, cytology, fungal culture, elimination diet trials, parasite control trials, and even allergy testing. When the behavior problem might have a neurological cause, neurological referral, imaging, or

cerebrospinal fluid evaluation might be indicated. Blood and urine tests should also be part of the behavior screening for any pet that might be placed on behavioral medication(s) to determine if there are any potential contraindications and to get baseline data for future comparisons.

Is it behavioral or medical?

A simplistic approach to this question would be to look at the behavioral presenting signs and do a comprehensive diagnostic assessment to determine if there is an underlying medical cause. The history and evaluation of all concurrent signs may also provide further insight as to whether there might be a medical cause. The presence of a behavioral inciting factor associated with the onset of the problem, in the absence of any abnormal medical findings, should on the other hand point to a behavioral cause. However, in actuality,

even if no medical cause can be identified, and even when a behavioral inciting factor can be identified, the practitioner cannot necessarily determine whether a pet with a self-traumatic disorder is itchy, whether a pet with fly-snapping or fixed staring is having a partial seizure, or whether a cat with hyperesthesia is painful, itchy, behaviorally aroused, or having a seizure. The diagnostic dilemma is further complicated by the fact that a behavioral problem can lead to physical injury such as in cases of compulsive self-trauma (see [Chapter 11](#)) where pain, inflammation, and infection are common sequelae. On the other hand, medical problems such as diabetes mellitus or feline interstitial cystitis can lead to behavioral signs of housesoiling which might persist even after a medical problem is resolved due to learned avoidance and/or newly learned behaviors. Pet owner responses may further reinforce the behavior or increase anxiety and stress. It is also possible that some stereotypic behaviors or compulsive disorders such as self-trauma could be initiated by medical problems but persist because of learned habits or alterations in receptors and neurotransmitters.

Stress may also affect both physical and behavioral health and well-being. Stress alters immune health and may be a contributing or exacerbating factor in dermatologic, gastrointestinal, respiratory, cardiac, and neurologic diseases, as well as behavioral pathology (discussed below). To complete the cycle, medical problems that cause pain, discomfort, or irritability will further exacerbate stress and anxiety. Therefore, reaching a diagnosis for a behavioral problem may not be a simple matter since stress can affect health and behavior, medical problems can affect behavior as well as cause further stress, and consequences (learning) will have a further impact on how a problem progresses. In some cases, a therapeutic response trial can be an invaluable diagnostic aid.

How medical problems affect behavior

Monitoring and assessing behavioral signs is a critical component of every veterinary visit. Almost any medical condition might first present with behavioral signs (e.g., lethargy, decreased social interaction, irritability, anxiety, aggression, anorexia, depression, decreased response to stimuli, housesoiling, night waking). In fact, for some conditions such as sensory decline, cognitive dysfunction syndrome or pain, behavioral signs might be the only presenting signs. Behavioral signs can also be used to monitor improvement or response to therapy. Therefore to ensure early diagnosis and intervention, owners should be asked about behavior problems at each visit and pet owners should be encouraged to seek guidance as soon as signs arise.

Medical problems causing behavioral signs

Medical problems can have a direct effect on behavior or may play a contributory role in how a pet might behave in certain situations or respond to specific stimuli. The effects of the interplay of health and behavior on the individual may be influenced by genetics, age, type of health problems, and environmental variables, including stimulus qualities, the environment, learning, whether the pet is leashed, tied, or cornered, whether the pet is in possession of a favored resource, or the presence of other family members or pets.

Box 6.1 Medical causes of behavioral signs

Degenerative/Developmental: cognitive dysfunction syndrome, sensory decline, degenerative arthritis/portosystemic shunt, hypoplasia of organ/compromised cerebrovascular circulation

Anomaly/Autoimmune: storage diseases, idiopathic epilepsy/autoimmune hemolytic anemia, granulomatous meningoencephalitis

Metabolic diseases: hepatic, renal, hormonal imbalances, enzyme deficiencies

Nutritional/Neoplasia: imbalances, excesses or deficiencies (may be primary or secondary to disease)/pituitary-dependent hyperadrenocorticism, brain tumor, hyperthyroid (cat), interstitial cell tumor

Inflammatory/Infectious: vasculitis, encephalitis/feline infectious peritonitis, feline leukemia virus, feline immunodeficiency virus, toxoplasmosis, rabies, distemper

Trauma/Toxin: head injury, any painful injury/lead, pesticides, illicit drugs

Brain, psychologic pathology: compulsive disorders, stereotypies, sleep disorders, phobias, generalized anxiety disorder, posttraumatic stress disorder, deprivation syndrome, and a number of abnormalities described in the French literature (discussed in [Chapter 22](#))

Signalment is an important consideration since, for example, the onset of behavior problems in older pets may increase the suspicion of a medical cause (see [Chapter 13](#)). Since medications can also affect behavior, any drugs or natural products that are being administered should be evaluated to determine if they might in any way be affecting the pet's behavior.

In general the DAMNIT-B acronym applies to the possible medical causes of behavioral signs as it does for most other medical disorders ([Box 6.1](#)). However, additional categories have been added for behavioral disorders that may have similarities to behavioral pathology and psychiatric disorders in humans based both on their similar signs and response to drug therapy. These might have a genetic cause but often are multifactorial in that neonatal effects, early experience (including maternal deprivation and environmental isolation), nutrition, health, socialization, learning, and consequences may all play a role.

Medical contributing factors – the threshold effect

Although health issues can directly affect behavior, such as when diabetes or cystitis incites housesoiling or pain leads to aggression, the threshold theory (as in dermatology when multiple subclinical pruritic stimuli combine to cause clinical pruritus) also likely applies to behavioral problems, since multiple stimuli can combine to push the pet beyond a threshold to where a behavior problem is exhibited. Medical conditions might also lower the pet's threshold or level of tolerance. This is especially important in senior pets where concurrent organ decline, sensory decline, painful conditions, age-related nervous system pathology, or other health issues can all affect behavior (see [Chapter 13](#)). For example, a dog that has a healthy relationship with other dogs in the house may become more irritable with painful conditions, such as dental disease or otitis, and avoid interactions or

Table 6.1 The effects of health on behavior

Organ system pathology	Possible behavioral consequences
Neurologic	
Central (intracranial/extracranial), particularly if affecting forebrain, limbic/temporal, and hypothalamic	Altered awareness, altered response to stimuli, loss of learned behaviors, housesoiling, disorientation, confusion, altered activity levels, loss of temporal orientation, vocalization, soiling, change in temperament (fear, anxiety), altered appetite, aggression
Partial seizures – temporal lobe epilepsy	Repetitive behaviors, self-traumatic disorders, chomping, staring, alterations in temperament (e.g., intermittent states of fear or aggression)
Sensory dysfunction Auditory, visual	Altered response to stimuli, confusion, disorientation, irritability, aggression, vocalization, housesoiling
Peripheral neuropathy	Self-mutilation, irritability, aggression, circling, hyperesthesia
Endocrine	
Hyper- or hypothyroid, hyper- or hypoadrenocorticism, diabetes mellitus, insulinoma, functional gonadal tumors	Altered emotional state, irritability/aggression, lethargy, decreased response to stimuli, anxiety, housesoiling/markings, night waking, decreased or increased activity, altered appetite, sexual behaviors (e.g., mounting, marking)
Hepatic	
Hepatic encephalopathy	Confusion, disorientation, learning disorders
Urogenital	
Lower urinary tract disease, renal disease	Polyuria, polydipsia, housesoiling
Musculoskeletal	
Pain (degenerative joint disease)	Altered response to stimuli, decreased activity, restless/unsettled, vocalization, housesoiling, aggression/irritability, self-trauma
Gastrointestinal	
Chronic bowel disease, foreign body, pancreatitis	Licking, polyphagia, pica, coprophagia, fecal housesoiling, wind sucking, tongue rolling, aggression
Dermatologic	
Otitis, chronic dermatitis, pyoderma, claw disorders	Overgrooming, acral lick dermatitis (dogs), nail biting, hyperesthesia, other self-trauma (chewing/biting/sucking/scratching)

perhaps communicate with the other pets using visual signals and body postures to stay away. However, should the pet develop sensory decline (auditory or visual), it may resort to aggression to keep the other dogs away if its opportunity to avoid and signal is lost. Similarly, other pets may

be confused by alterations in communication by the pet that is sick, ill, or unable to respond to signals due to sensory loss or declining mobility. Hyperthyroid cats might be more irritable and hence more likely to spray if exposed to the sights, sounds, or odors of new cats on the property.

When medical problems are diagnosed and treated and the behavior problem is not fully resolved this may be an indication that there are multiple factors contributing to the problem. One possibility is that during the course of the medical problems new behaviors have been learned. For example, if the pet becomes aggressive when approached, due to pain or discomfort (e.g., from otitis or arthritis), the aggression may continue after the pain is treated if the pet has learned that aggression successfully leads to retreat of a threat or control of social situations. In addition, if the pet with a painful condition has learned that someone touching it results in pain, it may continue to be guarded about any hand movement toward it long after the pain has subsided in anticipation that touch might still trigger pain. Another example is the pet that begins to soil in new locations due to lower urinary tract disease or diabetes, and subsequently learns new surface and location preferences.

Primary behavior problems

Assuming all medical causes have been ruled out or resolved, the assumption would be that the problem is behavioral and that the cause is likely some combination of genetics (nature) and environment (nurture). However, the problem is complicated by the fact that medical problems cannot always be entirely ruled out by diagnostic tests alone and that stress can have an impact on both health and behavior (discussed below). A therapeutic response trial may therefore be a useful or necessary test to rule out pain, seizures, or pruritus or to determine whether normalizing endocrine levels lead to a resolution in clinical signs. Alternately, if a compulsive disorder is suspected (see [Chapter 11](#)), a significant therapeutic response to clomipramine or fluoxetine might be diagnostic. In all cases, the practitioner should work to identify any underlying stress and provide appropriate guidance, since even if stress does not play a role in the problem that is being evaluated, it is still in the pet's and owner's best interest with respect to health and welfare to address it.

Medical causes of behavioral signs

Any illness is likely to lead to a behavioral response ([Table 6.1](#)). In fact, lethargy, depression, withdrawal, anorexia, and reduction in grooming may be not only a response to the illness itself but also part of the immune response and a means of limiting disease transmission within the group.¹ Recent studies have found that the behavioral changes associated with illness may even be caused by the disease itself. For example, the comorbidity of psychiatric disorders in patients with inflammatory bowel disease may be a direct effect of the microflora on behavior.^{2,3} In addition, elevated levels of proinflammatory cytokines produced during diseases such as cancer may have a direct effect on the development of fatigue and depression.⁴ Drugs, natural supplements, and combinations of products can also have profound effects on behavior.

Neurology and behavior

Behavior changes can be associated with forebrain lesions. A change in personality or mood, inability to recognize or respond appropriately to stimuli, and loss of previously learned behaviors might be indicative of forebrain involvement. Alterations in awareness, responsiveness to stimuli and consciousness might arise from any disease that involves the brainstem or forebrain. Altered responsiveness to stimuli can also arise from sensory or motor dysfunction. The limbic system is associated with emotion so diseases affecting it, including areas such as the hypothalamus, can also affect behavior.⁵

Diseases and degenerative processes of the special senses may initially present solely with behavioral signs. Sensory decline should be a consideration in pets with anxiety, increased vocalization, altered appetite, increased irritability, decreased or heightened responsiveness to stimuli, decreased responsiveness to learned commands, or changes in behavioral responses to people or other animals.

Diseases that affect the central nervous system and result in abnormal behavior may be intracranial in origin (e.g., congenital, neoplastic, degenerative, traumatic, circulatory) or may also be extracranial (e.g., infections (feline infectious peritonitis, rabies, toxoplasmosis), toxins, metabolic diseases, hepatic encephalopathy, endocrinopathies, compromised blood flow, cardiac disease, anemia, hypertension, medication, or illicit drugs). Cats with feline immunodeficiency virus may develop deficiencies in learning new tasks, loss of socialization, decreased grooming, housesoiling, aggressive behaviors, dementia, disorientation, polyphagia, stereotypies, decreased sleep, and overall more abnormal behaviors with more severe signs than in a control group of cats.^{6,7} Rapid-eye-movement sleep movement disorders, which might include signs of panic, howling, barking, growling, chewing, aggression, or violent limb movements during sleep, have been diagnosed in dogs.^{8,9} There is also an age-related decrease in cognitive function with a wide array of behavioral signs related to brain aging. This is discussed in detail in [Chapter 13](#). While there may be identifiable medical signs associated with serious neurologic problems, including alterations in mental status (stupor, coma), cranial nerve and sensory deficits, seizures, tremors or motor deficits (gait abnormalities), or signs of weakness, altered appetite, drinking, and elimination or emesis, this is not always the case.

Generally, seizure episodes are recurrent, intermittent, repetitive, and abnormal, and have a normal interictal period. In humans, temporal lobe epilepsy or partial (focal) seizures of the temporal lobe can have behavioral signs, including mood alterations, and visual, auditory, gustatory, olfactory, and somatic hallucinations. These may be associated with ictal, postictal, or perhaps even interictal stages. There may also be comorbidity of behavioral signs with epilepsy or with the drugs used for treatment.^{10–12} Simple partial seizures do not have altered consciousness while partial complex seizures may have altered levels of consciousness and may have a behavioral component such as hallucination or aggression (“rage”).

Primary behavior disorders and behavior pathology such as compulsive disorders may also be present, which can be difficult to differentiate from seizure disorders. Differentiating a medical from a behavioral cause can be particularly

challenging when pets present with air snapping, tail chasing, pouncing, fixed staring, star gazing, head shaking, spinning, checking, or tremors. Another group of signs include the head tremors of boxers, bulldogs and Doberman pinschers, and more generalized idiopathic tremors such as those seen in “white shaker dogs” and in great Danes.¹³ The interrelationship between behavior and health is further demonstrated in the Scottish terrier with Scotty cramp, a nonpainful disease that causes muscle tonicity with increasing activity, which generally resolves after rest. The cause may be a deficiency in serotonin in the spinal cord. In fact, in a recent case study, treatment with fluoxetine was effective at reducing signs at a dose of approximately 1 mg/kg bid.¹⁴

A therapeutic response trial with phenobarbital, potassium bromide, levetiracetam, gabapentin, carbamazepine, or perhaps clonazepam (cats) may rule out a possible seizure focus as a cause. However, since many of these drugs might also reduce anxiety or neuropathic pain, an improvement in clinical signs may prove to be an effective component of treatment, but it does not necessarily confirm a seizure as a diagnosis.

Endocrine effects on behavior

Endocrine diseases, including hyperthyroidism, hyperadrenocorticism, and hypothyroidism can also contribute to anxiety. Hypothyroidism may increase serotonin turnover so that behavior changes may be due to alterations in serotonergic activity.^{15,16} Since cortisol inhibits thyroid-stimulating hormone release, stress can also diminish thyroid levels. In humans, abnormalities in the metabolism of thyroid hormones appear to be important in mood disorders, and triiodothyronine has been used to augment the effects of antidepressant therapy.¹⁷ However, unless low thyroid levels can be documented, thyroid hormone replacement therapy is unlikely to be indicated and might lead to elevated thyroid levels.¹⁸ In fact, supplementation with thyroid can exacerbate irritability and arousal in cases where thyroid supplementation is not indicated or where excessive doses are used. In one study, dogs with behavioral problems were found to have higher levels of total thyroxine than control dogs.¹⁹

Gastrointestinal and ingestive disorders and behavior

Commonly reported behavior signs that might have a medical cause include polyphagia, hyperphagia, polydipsia, coprophagia, grass and plant eating, increased begging, garbage (trash) raiding, and stealing. Both medical problems and medications could cause or contribute to the problem. Medications that might increase ingestion (drinking or appetite) include corticosteroids, diuretics, and benzodiazepines, while appetite might be suppressed by some medications such as fluoxetine, cyclosporine, ketoconazole, or any medication that might cause gastrointestinal upset. Renal and hepatic diseases, diabetes insipidus, diabetes mellitus, and hyperadrenocorticism may be associated with increased eating or drinking. Similarly, pets on calorie restriction for weight loss may have a dramatic increase in appetite. Pets with polyphagia may beg, steal, raid garbage, or even develop coprophagia or pica.

For pets presented with coprophagia and grass eating, gastrointestinal, nutritional, and metabolic disorders should first be ruled out; however, both of these behaviors could be normal for the individual. Although it has been suggested that pets may eat grass or plants due to gastrointestinal upset, in one survey of 1571 owners of dogs that ate plants or grass, less than 10% of owners reported their pet to appear ill before eating plants.²⁰ Although most pets with coprophagia have no underlying health concerns, pets that eat stools (especially their own) should first be evaluated for possible medical issues by determining if there is abnormal stool consistency, volume, or frequency; signs of polyuria, polydipsia; and a normal body condition score. Pets with exocrine pancreatic insufficiency or other causes of malassimilation may have steatorrhea, and stools that are soft and voluminous with incomplete food digestion. The pet is often underweight, with a ravenous appetite.

Most coprophagia is likely a result of normal behavior evolved to maintain environmental cleanliness. Dogs that are hungry or greedy eaters are most commonly affected.^{21,22} Food additives are unlikely to be effective. For more details see [Chapter 10](#).

Unusual oral behaviors, including licking, sucking, pica, and smacking lips, or gulping, can be compulsive behavioral disorders but medical differentials would include partial (focal) seizures and gastrointestinal disorders. In a recent study of dogs with excessive licking of surfaces, gastrointestinal disorders, including eosinophilic and lymphoplasmacytic infiltration, delayed gastric emptying, irritable bowel syndrome, giardiasis, pancreatitis, and gastric foreign bodies were identified, and clinical signs in 9/17 dogs were completely resolved after medical treatment.²¹

The presence of gastrointestinal signs, including anorexia, hyporexia, colitis, emesis, dyschezia, increased volume of stool, stool color changes, or diarrhea, might support a medical cause of the signs. Gastrointestinal diagnostics and a therapeutic trial with a hydrolyzed protein diet, a low-fat reduced-residue diet, a novel protein diet or proton pump inhibitors or gastrointestinal protectants might be required to rule out potential medical causes. Picas may also be a compulsive disorder that might have a genetic basis in some individuals. For diagnosis and treatment of picas, see [Chapters 10 and 11](#).

Medical causes of housesoiling

Housesoiling can often be precipitated by medical problems. In a retrospective study of cats with problem elimination behavior, 60% of the cats had a history of feline urologic syndrome/feline lower urinary tract disease.²³ Inappropriate elimination can be due to any medical problem that causes an increased volume of urine or stool, increased discomfort during elimination, decreased control, or diseases that affect cortical homeostasis. On the other hand, urinary tract disease is unlikely to be a factor in urine marking in cats.²⁴ However, systemic illnesses leading to behavioral signs could contribute to marking in dogs or cats by altering hormonal states or increasing anxiety. Assessment of every elimination disorder should therefore begin with a physical examination, complete blood count, biochemical profile, and urinalysis, as well as any other imaging or endoscopic procedure that might be indicated. In marking cats, evidence of masculinization such as penile barbs or odorous urine which might

be indicative of a hormonal disorder might indicate that further hormonal assessment is warranted. In one study, a number of castrated dogs and cats were diagnosed with extratesticular tumors; some of those animals presented with intact male sexual characteristics.²⁵ Therefore when marking or other sexual behaviors arise in dogs or cats, examination for a scrotal mass and testosterone levels in response to gonadotropin-releasing hormone response test should be a consideration. See undesirable sexual behaviors in [Chapter 14](#) for details.

Medical causes of self-trauma

Self-traumatic disorders, including biting, chewing, scratching, licking, or excessive barbering, can lead to skin lesions and alopecia. Medical differentials include diseases that lead to pain or pruritus (e.g., hypersensitivity reactions, neuropathies, symmetrical lupoid onychodystrophy), infections (e.g., bacterial, fungal, parasitic), infestations, endocrinopathies, tumors, immune-mediated diseases, neoplasia, or skin disorders associated with systemic diseases (e.g., hepatocutaneous syndrome). When there are no primary lesions, and the problem is nonseasonal, behavioral presentations (tail mutilation, nail biting, psychogenic alopecia, acral lick dermatitis, face and neck scratching, regional or generalized pruritus, and flank sucking), it can be difficult to differentiate displacement behaviors and compulsive disorders from medical causes. In a study of 21 cases referred for psychogenic alopecia, 76.2% had a medical etiology.²⁶ A combination of adverse food reaction and atopy (6 cases) was the most common diagnosis. Some cats with histologically normal skin still had a medical cause.²⁶ For acral lick dermatitis, adverse food reactions, deep pyoderma (which is often multidrug-resistant), and a variety of medical causes, including tumors, trauma, and protozoal and fungal infections may all be factors.^{27,28} For claw (nail) biting in dogs, immune, inflammatory, or infectious causes including *Malassezia* must first be ruled out.

Feline hyperesthesia is a presenting complaint that may arise from any number of medical or behavioral causes, including dermatologic diseases, spinal disease, feline leukemia virus-induced myelopathy, complex partial seizures, pain and neuropathic pain, compulsive disorders, and any condition leading to behavioral arousal. Clinical signs may also include dilated pupils, twitching skin, biting at the tail, rippling along the back, excessive grooming, biting, and licking, and behaviors associated with high arousal, including anxiety, aggression, restlessness, running, defecation while running, and vocalizing. In fact, studies show that in some cases pain pathways may be overly sensitive to relatively innocuous touch sensations.²⁹ Feline oral facial pain syndrome may present with repetitive chewing and licking behaviors as well as pawing and self-mutilation. For further details on differentiating dermatologic from behavioral disorders, see [Chapter 11](#).

Drugs and behavioral effects

Since drugs are utilized for improving health or behavior, often a resolution in behavioral signs or positive effects will be achieved. However, therapeutic effects, side-effects, and adverse effects of medications can also contribute to changes

in behavior that may or may not be the intended, desired, or expected effect. Antihistamines such as diphenhydramine might sedate or could have a paradoxical effect of increasing restlessness or agitation; similarly, cyproheptadine generally increases appetite and might sedate but can also occasionally lead to a paradoxical increase in agitation. Drugs that have an anxiolytic effect such as benzodiazepines or buspirone may disinhibit some behaviors, leading to an increase in aggression in cases where fear might have been inhibiting the aggressive response. In addition, benzodiazepines might sedate, increase appetite, or cause paradoxical agitation and restlessness. Mirtazapine, a tetracyclic antidepressant, is most commonly used in pets as an appetite stimulant and antiemetic which might also calm or sedate; however it may lead to increased agitation and vocalization, especially in cats. While tricyclic antidepressants and selective serotonin reuptake inhibitors are less likely to lead to disinhibition, they can have variable effects on behavior, including anorexia, the potential for urine retention, or sedation in the more anticholinergic or antihistaminic antidepressants, or a more activating effect with fluoxetine. Corticosteroids might be expected to cause behavior changes, including polydipsia and polyphagia. These could contribute to begging, food stealing, pica, soiling, night waking, and panting. In one preliminary study of dogs treated with corticosteroids, owners reported increased nervousness and restlessness (6), irritable aggression (4), increased startle responses, food guarding or avoidance (3 each), and decreased activity or barking (2 each) in 11 of 31 dogs.³⁰ Excess thyroid supplementation might contribute to increased anxiety, restlessness, reactivity, weight loss, and possible aggression.

Pain and its effects on behavior

Pain management and assessment

One might wonder why the topic of pain management would appear in a text on veterinary behavior. First and foremost, the issue of humane care and the alleviation of pain and suffering should be a critical issue in any discussion of pet care. Specifically, however, pain assessment, response to pain medications, and the overall well-being of the pet depend heavily on the measurement and assessment of the pet's behavior.³¹ In addition, a wide range of behavior problems, ranging from avoidance, decreased activity, and inappetence to irritability, restlessness, and aggression could be due to underlying pain. In fact, any change from normal behavior and the development of new and abnormal behaviors can also be due to underlying pain or disease.

For veterinary practitioners, there are three areas of pain management on which to focus: (1) assessment in the hospital; (2) owner monitoring and assessment after hospitalization or surgery; and (3) owner measures to identify the onset and progress of pain, especially chronic disease states such as degenerative joint disease. In addition, separate measures are often required for dogs and cats, thus requiring up to six different measures or scales. While pain assessment should combine physical examination, diagnostic tests, and behavioral signs, there may be little to no correlation between objective and subjective measures.^{32,33} Therefore behavioral measures are often the primary determinant.

Behavioral pain assessment: diagnosis and monitoring

The fact that behavior is a critical component of pain assessment and monitoring should not be surprising since pain is defined as "an aversive sensory and emotional experience which elicits protective motor actions and results in learned avoidance and modification of behavior traits including social behavior" (iasp-pain.org). However, since animals have adaptive mechanisms which may mask signs of pain, an absence of painful behaviors does not necessarily mean an absence of pain. Therefore, to address pain in pets adequately, veterinarians and owners should begin with the assumption that procedures and medical conditions that are painful in humans would cause similar pain in pets.

While physical examination and physiologic measures may be useful to identify certain types of pain, behavioral measures, including the absence of normal behaviors or the expression of abnormal behaviors, may be of greater importance in diagnosing and monitoring some forms of pain³⁴ (Table 6.2). Numerous studies have found that subjective behavioral measures are an accurate means of measuring pain and assessing efficacy of therapeutics.^{33,35,36} However, since changes in behavior may be subtle and easily missed, veterinarians must take a proactive approach in: (1) educating staff on procedures and methods for pain monitoring; (2) informing pet owners about monitoring and management of pain after hospital discharge; and (3) advising pet owners about the potential significance of any change in behavior or emergence of abnormal behaviors.

Depending on the cause of pain, individual and breed differences, and whether the pain is acute or chronic, clinical presentation will vary. Pain may arise from cardiopulmonary, oncologic, dermatologic (otic), dental, gastrointestinal (inflammatory bowel disease, hepatitis, pancreatitis), musculoskeletal, ocular, urogenital, neurologic, iatrogenic (e.g., surgical procedures), and traumatic causes. Each of these

Table 6.2 Signs of pain in dogs and cats

Loss of normal behavior	Decreased activity, grooming, appetite, social interaction; increased sleep
Development of new or abnormal behaviors	Elimination, aggression, vocalization, altered interactions with people/other pets
Response to palpation of affected area	Tension, avoidance, withdrawal, threat, distress vocalization, aggression
Physiologic measures	Tachycardia, tachypnea, increased blood pressure, pupil dilation, increased cortisol levels, increased endorphins Poor correlation with subjective measures May be due to a variety of causes, including pain, fear/anxiety, surgical procedures, or other medical pathology, e.g., acidosis, hypovolemia
Locomotion, gait, mobility	Lameness, altered ability to climb, jump, stretch, rise, scratch

Adapted from Helyer P, Rodan I, Brunt J, et al. (2007) AAHA/AAFP pain management guidelines for dogs and cats. *J Feline Med Surg* 9:466–480.

may be associated with clinical signs that are specific to the area of the body or organ system involved. For example, dental pain may affect eating and can usually be found on physical examination; pain associated with anal pruritus or anal sacculitis may be accompanied by licking or “scooting” the rear along the ground; pain associated with otitis, traumatic injury, glaucoma, or even spinal disease might be identified by physical examination and medical diagnostics; while inflammatory bowel disease and bladder disease might be associated with a change in elimination behaviors and is identifiable on physical examination and stool or urine analysis. Conversely, some painful conditions such as degenerative joint disease in cats may have solely behavioral signs with poor correlation to findings on radiographs or clinical examination.^{37,38}

While a number of assessment tools have been proposed for evaluation of acute and chronic pain in dogs and cats, many of the current methods are still in need of further refinement and validation.³⁹ However, this does not mean that the practice should wait to implement pain scoring until fully validated and standardized protocols are published. Instead the practice should select pain assessment measures for in-hospital use, patient discharge, and ongoing evaluation based on the latest available data and what might be most practical for staff and clients. Modifications can then be made as needed based on the latest available data. In a recent survey over 80% of veterinary nursing staff felt that pain-scoring tools would be useful but only 8.1% of practices utilize a scoring system.⁴⁰

In-clinic pain assessment for surgical and medical patients and acute pain

A method of evaluating pain in hospitalized pets should be implemented in each veterinary clinic so that postoperative ongoing pain management can be modified to suit the needs of each pet on a case-by-case basis.⁴¹ Pets that might be experiencing pain should be monitored regularly for improvement or deterioration when determining response to pain medication or the need for additional medication. However, there is a great deal of individual variation in a pet's reactivity to painful stimuli. Both species differences and individual differences play a role. For example, prey species such as cats may tend to mask signs of illness and discomfort. Some dogs may continue to wag their tails and cats may continue to purr even though they may be experiencing severe pain. Therefore, a safe general rule of thumb for pain management is that pets likely feel pain in much the same situations as a person would. Any change from normal behavior may be an indicator of pain. However a normal baseline from which the pet deviates may be more useful for home assessment and less practical for a hospital environment. In addition, there appears to be a poor correlation between subjective signs and more objective physiologic measures, including heart rate, respiratory rate, blood pressure, body temperature, or a rise in beta-endorphins or cortisol.^{32,33,42,43} Medical causes that may cause or contribute to these signs should also be considered (e.g., acidosis, hypovolemia).

Behavioral responses to pain can range from hiding, avoidance, and escape, to agonistic body postures and expressions. Expressive behaviors and postures such as attention soliciting, whining, or purring, and head rubbing might also be

indicative of attempts to relieve pain. Other changes in behavior such as vocalization and aggression are not specific to pain and may be associated with many other stimuli as well as reactions to drugs used for anesthesia and premedication (e.g., noise sensitivity, excitement on induction, or recovery). Therefore pain-scoring systems that rely solely on agitation, movement, and vocalization or physiologic measures are unreliable.

Monitoring scales

In-clinic monitoring should focus on behavior, including grooming, elimination, activity, vocalization, and sleep patterns, as well as body postures, appetite, mobility, and gait. However, mobility and gait may be difficult to assess in pets that are caged or immobile, and changes in these behaviors can be due to anxiety rather than discomfort. An additional confounding factor is in the differentiation of signs of pain from the depression or dysphoria associated with some narcotics.

For dogs, primary measures of evaluation include posture, activity, vocalization, mental status, attention to affected area, demeanor, mobility, and response to palpation.^{44,45} A commonly used measure for acute pain in dogs that at present appears to be a reliable standard for subjective measures is the Glasgow Composite Pain Scale^{46–49} (Form 6.1). Another useful approach, although perhaps not as well validated, would be to use a picture-guided evaluation similar to that used in the monitoring of facial expressions in neonatal humans.⁵⁰ One such scale is the Colorado State Acute Pain Scales for dogs (Figure 6.1 and Box 6.2).

For hospitalized cats, a validated scoring system is still needed. However, a number of studies have developed measures for pain evaluation in cats that might be used or modified for in-clinic assessment in the interim. Cats do not always demonstrate pain overtly, making recognition difficult. Evaluation generally includes observations and interactive measures.^{33,51} Licking or biting at the surgical site or a decrease in eating or drinking might be indicative of pain. Body postures and facial expressions may include squinting, head down, abdomen tucked up, crouching, or stiffened or tense. Cats may sit quietly, avoid attention, appear depressed, hide, and attempt to avoid petting or handling. On the other hand some cats growl, hiss, vocalize, and become aggressive with attempts to handle.⁵² However, while gauging the cat's reaction to gentle handling and palpation may be useful, some cats may be too fearful or painful to allow social interaction.⁴⁰ For a pictorial scale for cats, see Figure 6.2 and Box 6.2.

Owner monitoring after discharge from surgery, illness, or injury

Pet owners should also be advised that, as a general rule of thumb, the pet is likely to feel pain in much the same way a person would in the same situation. Cat owners should be advised to monitor closely and report any changes in both mobility and behavior, including overall activity, time spent sleeping, playfulness, and any change from what was previously normal in behavior or temperament (e.g., increase or decrease in avoidance or aggression).⁵³ Any change in mobility or behavior may not only be an indication of pain, but

Form 6.1 Short form of the Glasgow Composite Pain Score**SHORT FORM OF THE GLASGOW COMPOSITE PAIN SCALE**

Dog's name _____

Hospital Number _____ Date / / Time

Surgery Yes/No (delete as appropriate)

Procedure or Condition _____

*In the sections below please circle the appropriate score in each list and sum these to give the total score.***A. Look at dog in Kennel***Is the dog?*

(i)		(ii)	
Quiet	0	Ignoring any wound or painful area	0
Crying or whimpering	1	Looking at wound or painful area	1
Groaning	2	Licking wound or painful area	2
Screaming	3	Rubbing wound or painful area	3
		Chewing wound or painful area	4

In the case of spinal, pelvic or multiple limb fractures, or where assistance is required to aid locomotion do not carry out section **B** and proceed to **C**
Please tick if this is the case ☐ then proceed to C.

B. Put lead on dog and lead out of the kennel. **C. If it has a wound or painful area including abdomen, apply gentle pressure 2 inches round the site.**
When the dog rises/walks is it?

(iii)	
Normal	0
Lame	1
Slow or reluctant	2
Stiff	3
It refuses to move	4

Does it?

(iv)	
Do nothing	0
Look round	1
Flinch	2
Growl or guard area	3
Snap	4
Cry	5

D. Overall*Is the dog?*

(v)		(vi)	
Happy and content or happy and bouncy	0	Comfortable	0
Quiet	1	Unsettled	1
Indifferent or non-responsive to surroundings	2	Restless	2
Nervous or anxious or fearful	3	Hunched or tense	3
Depressed or non-responsive to stimulation	4	Rigid	4

Total Score (i+ii+iii+iv+v+vi) = _____

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The short form composite measure pain score (CMPS-SF) can be applied quickly and reliably in a clinical setting and has been designed as a clinical decision-making tool which was developed for dogs in acute pain. It includes 30 descriptor options within 6 behavioral categories, including mobility. Within each category, the descriptors are ranked numerically according to their associated pain severity and the person carrying out the assessment chooses the descriptor within each category which best fits the dog's behavior/condition. It is important to carry out the assessment procedure as described on the questionnaire, following the protocol closely. The pain score is the sum of the rank scores. The maximum score for the 6 categories is 24, or 20 if mobility is impossible to assess. The total CMPS-SF score has been shown to be a useful indicator of analgesic requirement and the recommended analgesic intervention level is 6/24 or 5/20. (Used with permission, University of Glasgow)



Date _____

Time _____

Colorado State University
Veterinary Teaching Hospital

Canine Acute Pain Scale

Rescore when awake

- ☐ Animal is sleeping, but can be aroused – Not evaluated for pain
☐ Animal can't be aroused, check vital signs, assess therapy

Pain Score	Example	Psychological and Behavioral	Response to Palpation	Body Tension
0		☐ Comfortable when resting ☐ Happy, content ☐ Not bothering wound or surgery site ☐ Interested in or curious about surroundings	☐ Nontender to palpation of wound or surgery site, or to palpation elsewhere	Minimal
1		☐ Content to slightly unsettled or restless ☐ Distracted easily by surroundings	☐ Reacts to palpation of wound, surgery site, or other body part by looking around, flinching or whimpering	Mild
2		☐ Looks uncomfortable when resting ☐ May whimper or cry and may lick or rub wound or surgery site when unattended ☐ Droopy ears, worried facial expression (arched eye brows, darting eyes) ☐ Reluctant to respond when beckoned ☐ Not eager to interact with people or surroundings but will look around to see what is going on	☐ Flinches, whimpers, cries or guards/pulls away	Mild to moderate Reassess analgesic plan
3		☐ Unsettled, crying, groaning, biting or chewing wound when unattended ☐ Guards or protects wound or surgery site by altering weight distribution (i.e. limping, shifting body position) ☐ May be unwilling to move all or part of body	☐ May be subtle (shifting eyes or increased respiratory rate) if dog is too painful to move or is stoic ☐ May be dramatic, such as a sharp cry, growl, bite or bite threat, and/or pulling away	Moderate Reassess analgesic plan
4		☐ Constantly groaning or screaming when unattended ☐ May bite or chew at wound, but unlikely to move ☐ Potentially unresponsive to surroundings ☐ Difficult to distract from pain	☐ Cries at non-painful palpation (may be experiencing allodynia, wind-up, or fearful that pain could be made worse) ☐ May react aggressively to palpation	Moderate to severe May be rigid to avoid painful movement Reassess analgesic plan

○ Tender to palpation
 × Warm
 ■ Tense

Comments _____

Figure 6.1 Colorado State University (CSU) Canine Acute Pain Scale. (Reproduced with permission of P. Hellyer, Colorado State University. See box 6.2 for use instructions)

Box 6.2 Instructions for using the Colorado State University Acute Pain Scale (Figures 6.1 and 6.2)

The Colorado State University Acute Pain Scale (Figure 6.1 and 6.2) is intended primarily as a teaching tool and to guide observations of clinical patients. The scale has not been validated and should not be used as a definitive pain score. Use of the scale employs both an observational period and a hands-on evaluation of the patient. In general, the assessment begins with quiet observation of the patient in its cage at a relatively unobtrusive distance. Afterwards, the patient as a whole (wound as well as the entire body) is approached to assess reaction to gentle palpation, indicators of muscle tension and heat, and response to interaction.

1. The scale utilizes a generic 0–4 scale with quartermarks as its base along with a color scale as a visual cue for progression along the 5-point scale.
2. Realistic artist's renderings of animals at various levels of pain add further visual cues. Additional drawings provide space for recording pain, warmth, and muscle tension; this allows documentation of specific areas of concern in the medical record. A further advantage of these drawings is that the observer is encouraged to assess the overall pain of the patient in addition to focusing on the primary lesion.
3. The scale includes psychological and behavioral signs of pain as well as palpation responses. Further, the scale uses body tension as an evaluation tool, a parameter not addressed in other scales.
4. There is a provision for nonassessment in the resting patient. To the authors' knowledge this is the only scale that emphasizes the importance of delaying assessment in a sleeping patient while prompting the observer to recognize patients that may be inappropriately obtunded by medication or more serious health concerns.
5. Advantages of this scale include ease of use with minimal interpretation required. Specific descriptors for individual behaviors are provided, which decreases interobserver variability. Additionally, a scale is provided for both the dog and the cat.
6. A disadvantage of this scale is a lack of validation by clinical studies comparing it to other scales. Further, its use is largely limited to, and is intended for use in, acute pain.

could also be an indication of stress, surgical complications, drug side-effects, or a progression of the underlying illness. Appetite, drinking, and elimination habits should also be closely monitored. Providing a picture-guided evaluation to pet owners may aid them in better monitoring for pain. For dogs, similar measures to what is used in the veterinary clinic can also be used in the home. Dogs should be monitored for posture, activity, vocalization, attention to wound area, a change in demeanor, mobility, and response to touch. The Glasgow Pain Scale or a picture guide might be useful for pet owner monitoring. When pain medications have been dispensed, the goal should be a return to normal behavior and mobility, with specific attention to any change in behavior when pain medications are withdrawn.

Assessing chronic pain

Dogs

In dogs with pain due to degenerative joint disease, owners may report signs of lameness or alterations in gait or mobility which might then be confirmed by veterinary orthopedic exam and gait analysis and supported by radiographic

Box 6.3 Behavioral measures of degenerative joint disease in cats^{1,2}

Mobility: decreased walking, running, jumping, stretching, climbing, and litterbox use
 Activity: sleeping more, playing less
 Grooming: increased scratching and licking, decreased coat maintenance
 Temperament: decreased or increased interaction with people, less interest or tolerance of other pets

¹Bennett D, Morton C (2009) A study of owner observed behavioural and lifestyle changes in cats with musculoskeletal disease before and after analgesic therapy. *J Feline Med Surg* 11:997–1004.

²Zamprogn H, Hansen BD, Bondell HD, et al. (2010) Item generation and design testing of a questionnaire to assess degenerative joint disease-associated pain in cats. *Am J Vet Res* 71:1417–1424.

findings.^{44,54,55} However, radiographic variables do not correlate well with either owner or veterinary pain scores.⁵⁴ Alterations in behavior and demeanor are also commonly reported signs of pain and may be the initial, primary, or only sign of pain in some dogs. Therefore any change from normal behavior, including activity, social interactions, and play, the appearance of new behavioral signs (e.g., housesoiling, vocalization) or a change in temperament or mood (e.g., aggression, avoidance) might be due to pain.^{44,54} In short, changes in locomotion (gait, abnormal body position), behavior (decreased social interaction, decreased activity, anxiety, attention seeking, decreased performance) and demeanor (e.g., aggression, decreased social interest) can be used to identify arthritis in dogs and monitor response to therapy.⁵⁵ (Scale available from www.caninebpi.com.) Another standardized scoring measure for chronic pain in dogs is available from the University of Helsinki at <http://www.vetmed.helsinki.fi/english/animalpain/hcpi/index.html>.⁵⁴

Cats

While lameness and gait alterations may be the primary presenting sign of degenerative joint disease in dogs, this is seldom the case in cats.⁴⁴ The fact that cats may not show obvious signs of pain or illness is not surprising in that a decrease in activity may be part of the healing process while a display of illness or vulnerability may lead to attacks from predators or other members of the species.¹ In addition, lameness and alterations in gait may be absent since cats are small and agile and pain is often bilateral.⁵⁶ In cats, studies consistently show that changes in lifestyle (including activity and mobility) and behavior (including grooming and temperament) are the most sensitive method of diagnosing arthritic pain and that less than half of these cats show lameness or gait alterations.^{37,38,57} In addition, owner measures of alterations in activity were consistent with objective measures using an accelerometer.⁵⁷ A recent study has also confirmed changes in these same categories in cats by comparing cats with minimal degenerative joint disease to cats with more severe degenerative joint disease⁵⁸ (Box 6.3). A visual analog scale might be an effective way of identifying pain and assessing response to therapy⁵⁹ (Figure 6.3). Even when there is radiographic evidence of arthritis, lameness was present in only 4–17% of these cats.^{60–62} Conversely, clinical



Date _____

Time _____

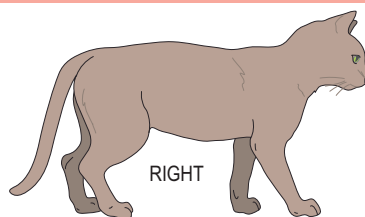
Colorado State University
Veterinary Teaching Hospital

Feline Acute Pain Scale

Rescore when awake

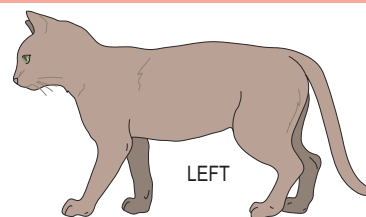
- ☐ Animal is sleeping, but can be aroused – Not evaluated for pain
☐ Animal can't be aroused, check vital signs, assess therapy

Pain Score	Example	Psychological and Behavioral	Response to Palpation	Body Tension
0		☐ Content and quiet when unattended ☐ Comfortable when resting ☐ Interested in or curious about surroundings	☐ Not bothered by palpation of wound or surgery site, or to palpation elsewhere	Minimal
1		☐ Signs are often subtle and not easily detected in the hospital setting; more likely to be detected by the owner(s) at home ☐ Earliest signs at home may be withdrawal from surroundings or change in normal routine ☐ In the hospital, may be content or slightly unsettled ☐ Less interested in surroundings but will look around to see what is going on	☐ May or may not react to palpation of wound or surgery site	Mild
2		☐ Decreased responsiveness, seeks solitude ☐ Quiet, loss of brightness in eyes ☐ Lays curled up or sits tucked up (all four feet under body, shoulders hunched, head held slightly lower than shoulders, tail curled tightly around body) with eyes partially or mostly closed ☐ Hair coat appears rough or fluffed up ☐ May intensively groom an area that is painful or irritating ☐ Decreased appetite, not interested in food	☐ Responds aggressively or tries to escape if painful area is palpated or approached ☐ Tolerates attention, may even perk up when petted as long as painful area is avoided	Mild to moderate Reassess analgesic plan
3		☐ Constantly yowling, growling, or hissing when unattended ☐ May bite or chew at wound, but unlikely to move if left alone	☐ Growls or hisses at non-painful palpation (may be experiencing allodynia, wind-up, or fearful that pain could be made worse) ☐ Reacts aggressively to palpation, adamantly pulls away to avoid any contact	Moderate Reassess analgesic plan
4		☐ Prostrate ☐ Potentially unresponsive to or unaware of surroundings, difficult to distract from pain ☐ Receptive to care (even mean or wild cats will be more tolerant of contact)	☐ May not respond to palpation ☐ May be rigid to avoid painful movement	Moderate to severe May be rigid to avoid painful movement Reassess analgesic plan



RIGHT

- Tender to palpation
 × Warm
 ■ Tense



LEFT

Comments _____

Figure 6.2 Colorado State University (CSU) Feline Acute Pain Scale. (Reproduced with permission of P. Hellyer, Colorado State University. See box 6.2 for use instructions)

Evaluation of changes in mobility and activity using the VAS assessment as an 'absolute measure' of the activity

VAS – Visual Analog Scale		
Walking	Normal	Impossible
Running	Normal	Impossible
Ability to jump up	Normal	Impossible
Ability to jump down	Normal	Impossible
Climbing stairs	Normal	Impossible
Descending stairs	Normal	Impossible
Playing/interacting with humans	Normal	Does not play
Playing with other pets	Normal	Does not play
Rising from a resting position	Normal	Impossible
Grooming	Normal	Impossible
Use of litter box	Normal	Impossible
Chasing objects (toys, prey, etc)	Normal	Does not do
Stretching/position of resting	Normal	Does not do
Eating	Normal	Does not eat
Seeking seclusion/hiding	Never hides	Never see
Vocalization on handling	Quiet	Screams when handled
Resentment on handling	No objection	Impossible to handle
Aggressiveness on handling	No objection	Impossible to handle
Height of jumping down	Normal	Impossible
Sleeping	Unable to sleep	Sleeps all the time
Restlessness	Normal	Very restless
Spontaneous vocalization	Never does this	Never is quiet
Playing with toys	Normal	Does not play
Aggression	None	Very aggressive

Figure 6.3 Evaluation of changes in mobility and activity using the visual analog scale (VAS) as an "absolute measure" of activity. (Reproduced from Lascelles BDX, DePuy A, Thomson B, et al. (2010) Evaluation of a therapeutic diet for feline degenerative joint disease. Appendix 1. J Vet Intern Med 24:487–495, with permission from Journal of Veterinary Internal Medicine, John Wiley.)

examination may lead to an overestimation of pain as cats may resent joint palpation.^{61,63}

While improvement in behavioral signs, gait, or mobility would be an indication of the efficacy of pain medication and the health and welfare of the pet, some behavior problems may persist even after the pain is successfully controlled. This might be the case with altered social interactions, including aggression, or with housesoiling, in which consequences and learning have contributed to new behavioral strategies. In these cases concurrent pain medication in combination with behavioral therapy or environmental management may be needed to achieve successful outcomes.

Managing pain

Prior to exposure to noxious stimuli (e.g., surgery), preemptive pain management should be instituted. Pre- and perioperative analgesia are the most effective means of minimizing postoperative pain and improving outcome. Whenever possible, it is best to pre-emptively prevent pain, since “wind-up” (an adaptation of the spinal cord that amplifies pain signals) poses one of the greatest challenges to managing chronic pain.⁶⁴ For acute pain, balanced analgesia that involves the combination of two or more classes of analgesic drugs is generally most effective, since it likely addresses different mechanisms for pain sensation. For example, the use of nonsteroidal anti-inflammatory drugs (NSAIDs) or local anesthesia can inhibit transduction at the site of injury, and a local nerve block can be used to prevent transmission of the nerve impulse and pain modulation pathways in the spinal cord.

The simplified assumption that a pet under sufficient depth of anesthesia will not perceive pain is no longer valid. Although anesthetics inhibit the perception of pain, anesthetic recovery can be improved, and the need for postoperative pain medications reduced, by blocking transduction at the site of injury, blocking the transmission of pain, and enhancing spinal modulation to prevent noxious stimuli from sensitizing the nervous system. An understanding of the potential for pain with each procedure and the drug regimen that might best prevent this pain is therefore an important aspect of humane care.

Chronic pain, such as from osteoarthritis, is one of the most common indications for long-term pain management and yet misconceptions on proper use of medications for this purpose are commonplace. The medications most commonly used for this purpose are the NSAIDs and related coxibs, which have both analgesic and anti-inflammatory effects by inhibiting the synthesis of prostaglandins through cyclooxygenase inhibition. Members of this drug class licensed for use in pets include carprofen, meloxicam, tepoxalin, firocoxib, deracoxib, mavacoxib, robenacoxib, and etodolac. Since NSAIDs are the most common drugs used to manage chronic pain in veterinary practices,⁶⁵ it is important for them to be selected and used appropriately (Box 6.4).

In addition to pharmacologic therapy, nutritional supplements are commonly used in the management of chronic painful conditions, such as osteoarthritis. Some ingredients used in the pursuit of nonpharmacologic pain management include glucosamine, chondroitin, and green-lipped mussel⁶⁶; omega-3 fatty acids, such as eicosapentaenoic acid may also provide some benefit, alone,^{67,68} or combined with

Box 6.4 Tips for proper nonsteroidal anti-inflammatory drug (NSAID) use

- NSAIDs decrease inflammation in the tissue, but also provide pain relief in the dorsal horn¹
- COX selectivity of an NSAID (i.e., COX-1 versus COX-2) has no demonstrable association with efficacy² so don't consider one NSAID to be superior to another because of its COX selectivity
- Improvement in clinical signs tends to increase steadily over time, so treatment should not be stopped prematurely in dogs doing well³
- Idiosyncratic reactions are relatively rare, but most likely to arise early in the course of therapy⁴
- Long-term treatment does not result in an increase in the incidence of adverse reactions⁵
- Use the medications at the lowest label dose on a regular basis. Attempts to use the medication at lower doses or on an as-needed basis increase “wind-up” without providing any additional safety consideration
- NSAID-associated hepatotoxicity is thought to be idiosyncratic and unpredictable⁶ and *all* NSAIDs, regardless of COX-1/COX-2 specificity, are capable of producing hepatic injury⁶
- All NSAIDs, regardless of COX-1/COX-2 specificity, are capable of producing gastrointestinal ulceration, particularly in high doses²
- Don't administer NSAIDs to animals prone to gastrointestinal ulcers, or with other drugs known to be ulcerogenic, such as corticosteroids or aspirin
- All NSAIDs, regardless of COX-1/COX-2 specificity, are capable of producing gastrointestinal adverse effects (vomiting, diarrhea, decreased appetite) without causing ulceration²
- All NSAIDs have the potential for producing renal injury, and underlying kidney disease, salt depletion, and dehydration can increase the risk²
- Cats may be more susceptible than dogs to drug-induced nephrotoxicity⁷
- COX-1/COX-2 inhibitory ratios must be cautiously interpreted if trying to infer drug safety⁸
- The efficacy of angiotensin-converting enzyme (ACE) inhibitors and diuretics (such as furosemide) may be diminished when administered concurrently with NSAIDs
- Don't use different NSAIDs at the same time in the same patient
- Although the ideal duration has not been determined, most experts recommend a washout period of 5–7 days between switching to a different NSAID⁶
- The best way to manage risks of adverse events is regular veterinary evaluations and periodic laboratory evaluation based on concerns for safety

COX, cyclooxygenase.

¹Johnston SA, Budsberg SC (1997) Non-steroidal anti-inflammatory drugs and corticosteroids for the management of canine osteoarthritis. *Vet Clin North Am Small Anim Pract* 27:841–862.

²Papich MG (2008) An update on non-steroidal anti-inflammatory drugs (NSAIDs) in small animals. *Vet Clin North Am Small Anim Pract* 38:1243–1266.

³Autefage A, Gossellin J (2007) Efficacy and safety of long-term oral administration of carprofen in the treatment of osteoarthritis in dogs. *Rev Med Vet* 158:119–127.

⁴Lee WM (2003) Drug-induced hepatotoxicity. *N Engl J Med* 349:474–485.

⁵Innes JF, Clayton J, Lascelles BD (2010) Review of the safety and efficacy of long-term NSAID use in the treatment of canine osteoarthritis. *Vet Rec* 166:226–230.

⁶Lascelles BD, McFarland JM, Swann H (2005) Guidelines for safe and effective use of NSAIDs in dogs. *Vet Ther* 6:237–251.

⁷Dowling P (2011) Corticosteroid and antiinflammatory drug interactions. *NAVCC Clinician's Brief*, March 89–92.

⁸Streppa HK, Jones CJ, Budsberg SC (2002) Cyclooxygenase selectivity of nonsteroidal anti-inflammatory drugs in canine blood. *J Am Vet Med Assoc* 63:91–94.

NSAIDs.⁶⁹ Synthetic dog-appeasing pheromone also appears to affect behavioral and neuroendocrine perioperative stress responses by modification of lactotropic axis activity and may possibly improve the recovery and welfare of dogs undergoing surgery.⁷⁰

Pain pathways and pain management

By understanding how pain is perceived, a combination of pharmaceutical agents can be used to remove pain or reduce its intensity.

- The pain pathway begins at the nociceptive receptors in the sensory nerve endings. Transduction can be prevented by the use of local anesthesia at the site of pain perception. NSAIDs and intra-articular opioids can also diminish transduction by decreasing inflammatory elements such as prostaglandins at the site of injury.
- Transmission of pain can be prevented by blockade of peripheral nerves and nerve plexuses, with local anesthetic infiltration or by epidural injection.
- Modulation of pain within the spinal cord can be augmented by opioids, NSAIDs, or alpha 2 adrenergic agonists.
- The perception of pain can be modulated by general anesthesia, systemic opioids, and alpha 2 agonists.
- Other forms of pain management that do not involve drug therapy may also need to be considered. Decreasing mobility of the affected area, support, cold or heat packs, physical therapy such as massage or stretching, acupuncture, and the prevention of further trauma or damage to the area by bandaging or using an Elizabethan collar may all be useful.

Neuropathic pain

Neuropathic pain is defined as pain arising as a direct lesion or disease affecting the somatosensory system (pain arising from nerve injury). It can be extremely difficult to diagnose, may have a greater impact on quality of life than other forms of pain, and is poorly or partially responsive to NSAIDs.⁷¹ In humans, the pain is described as burning, pulsing, shooting, or stabbing. As with other forms of pain, changes in behavior and demeanor, reactivity to palpation, and gait or locomotor changes may be seen depending on the location of the lesions. However signs of hyperesthesia and self-trauma such as tail mutilation, paw chewing, or face scratching might also arise as a result of neuropathic pain.⁷² Differential diagnosis might include medical problems ranging from metabolic diseases and endocrinopathies to primary dermatologic disorders. Neuromuscular disorders, partial seizures, and compulsive disorders may also need to be ruled out. Once other medical and behavioral disorders are ruled out, the first lines of treatment in humans are the calcium channel blockers such as gabapentin and pregabalin, antidepressants with both norepinephrine and serotonin reuptake inhibition (such as amitriptyline or nortriptyline), and topical lidocaine. This would be followed by opioids and tramadol. The third level of treatment would include antiepileptic drugs such as carbamazepine, other antidepressants such as paroxetine, or adjunctive therapeutics, including clonidine, dextromethorphan, or memantine.⁷¹ Although NSAIDs are not considered a primary treatment option, they

may reduce some of the secondary pain and inflammation that might be induced by neuropathic pain.

How stress and behavior affect physical and mental health

Stress and its effects on health and behavior

While it is common to consider the effects of disease on behavior, acute and chronic stress can also have an impact on both health and behavior.⁷³ Stress is an altered state of homeostasis which can be caused by physical or emotional factors. This results in psychological, behavioral, endocrine, and immune effects that are designed to handle stress.⁷⁴ Response to stress will vary between individuals and may be affected by breed, early experience, sex, age, health, and the pet's behavioral profile. In dogs and cats, exposure to mild stressors and handling early in life stimulates hormonal, adrenal, and pituitary systems that result in animals that perform better in problem-solving tasks, have greater resistance to disease, and can better withstand stress later in life.⁷⁵ Thus, not only can health affect behavior but behavior can affect health. Improving or resolving any underlying stress and anxiety can be essential to the health and welfare of the pet and the strength of the pet-owner bond.

Causes of stress

Stress can have both physical and psychological causes. Physical stress can be caused by disease or illness, pain, exposure to temperature extremes, sleep deprivation, thirst, or hunger. Psychological stressors might include exposure to fear-evoking stimuli, social conflict, disturbing the pet when sleeping or eating, frustration (goal frustration), unpredictable consequences (rewards or punishment), environmental deprivation, scheduling changes, or situations leading to conflict (competing motivations).

The stress response

The first component of the stress response is the hypothalamic-pituitary-adrenal (HPA) axis, in which the hypothalamus releases corticotropin-releasing hormone, which stimulates the release of adrenocorticotrophic hormone. Cortisol increases and oxytocin may decrease.⁷⁶ The second component is the sympathetic-adrenal-medullary system, which releases norepinephrine (noradrenaline) and epinephrine (adrenaline). Norepinephrine is associated with sensitization and fear conditioning. In cats, transient hyperglycemia may occur. If stress is persistent or chronic there is continued stimulation of the HPA axis and an increase in cortisol with depression of the catecholamine system, leading to alterations in the immune system and possible development of stress-related diseases. A recent study found higher plasma levels of dopamine and serotonin in pets with stress compared to controls.⁷⁴ Increases in dopamine may enhance aggressive behavior and lead to an increase in stereotypic and grooming behaviors. Elevated prolactin levels were found in dogs with chronic stress, stereotypic behaviors, fear aggression, and autonomic signs, while lower levels of

prolactin were associated with acute fearful and phobic events.^{70,77} Therefore, there can be marked differences in the way that acute and chronic stress affects health and behavior.^{77,78}

Stress and physical health

In humans, there may be a correlation between stress and poor health, poor immune function, cardiovascular disease, skin disease, asthma, gastrointestinal disorders, and cellular aging. Similarly, in pets, stress may alter immune function, and has been shown to be a contributing or aggravating factor in gastrointestinal diseases, dermatologic conditions, respiratory and cardiac conditions, behavioral disorders, and a shortened lifespan.⁷⁹ In one study, behaviors associated with illness, including disorders of the gastrointestinal and urinary tract, skin, as well as behavioral problems including avoidance and soiling behaviors, were all associated with environmental stressors in a colony of cats.⁸⁰

Urinary tract and stress

Cats with feline idiopathic cystitis (FIC) have altered bladder permeability during stress when compared to cats in an enriched environment.⁸¹ An increase in plasma norepinephrine has been demonstrated in cats with interstitial cystitis.⁸² In recent studies, there is increasing evidence of behavioral risk factors associated with interstitial cystitis, including moving between homes, movement blocked by other cats, living with dogs, or living with another cat with which there was conflict.^{83,84} Cats receiving multimodal environmental modification had a significant reduction in FIC, respiratory disease, fearfulness, and nervousness and less inflammatory bowel disease and aggression.⁸⁵ Behavior therapy to reduce anxiety and provide increased space and separate resources to reduce conflict also has been shown to lead to significant improvement over placebo.⁸³ In a placebo-controlled study, there were fewer bouts of FIC when a Feliway diffuser was installed.⁸⁶

Gastrointestinal and ingestive disorders and stress

Stress and anxiety in humans can alter bacterial flora, inhibit gastric emptying, increase colonic activity, and increase intestinal permeability, leading to irritable bowel syndrome, inflammatory bowel disease, gastrointestinal reflux, stress-induced hypersensitivity, and heartburn.⁸⁷ In pets, acute fear and anxiety can lead to a decrease in appetite or anorexia, diarrhea, vomiting, or colitis. With chronic anxiety, such as during a move, when a new pet is introduced into the home, or with the loss of a human or pet in the family, there may be more profound effects on behavior and health. In cats, prolonged anorexia can have serious hepatic consequences. Pica, polyphagia, and polydipsia may also be stress-induced. Stress also appears to be a risk factor for coprophagia.²¹ In one canine study, dogs with inflammatory bowel disease appeared to be more anxious when exposed to novel stimuli, indicating a possible relationship between gastrointestinal disorders and the dogs' response to stressors.⁸⁸ In addition, stress associated with unexpected environmental events in colony cats had increased risks for decreased food intake, no

elimination for 24 hours, as well as urine or stools outside the box.⁸⁰

Dermatologic signs and stress

Although stress leads to an immune response intended to enhance defense mechanisms, in some individuals, rather than helping to achieve homeostasis, these stressors may contribute to inflammatory dermatoses.⁸⁹ This brain-skin connection is comprised of psycho-neuro-endocrino-immunological factors which, under situations of stress, may play a role in the pathogenesis of dermatoses such as atopic dermatitis, psoriasis, and urticaria.^{90–92} In humans with atopic disease, stress has been shown to increase levels of immunoglobulin E and eosinophils and cause an overreactive sympathetic adrenomedullary system and a decrease in HPA responsiveness.^{93–95} Stress may also lead to increased release of vasoactive neuropeptides from dermal nerve endings that may contribute to atopic disease, psoriasis, and other chronic skin diseases.^{96–98} Opioid peptides released during stress may further potentiate pruritus.⁹⁹ In addition, an association between asthma and atopy has been demonstrated in humans.¹⁰⁰ A link has also been established between stress and increased epidermal permeability.¹⁰¹ Skin barrier permeability may be further altered by cortisol release.^{90,91,102} A similar alteration in skin barrier function and an increase of epidermal permeability in pets might exacerbate atopic disease in a genetically predisposed individual. Finally, skin disease itself can affect quality of life and lead to further stress. Therefore stress intervention in humans can improve both well-being as well as cutaneous manifestations.^{90,103} Self-traumatic disorders in humans may fall into the obsessive-compulsive spectrum such as the impulse control disorders trichotillomania, skin picking, and nail biting, compulsive washing and grooming, or psychiatric disorders leading to psychogenic excoriation.

In dogs and cats, there is a similar interplay between the brain and skin. Although self-traumatic disorders may have a primary medical cause, they may have a psycho-neuro-immuno-endocrinological component, may be a primary behavior disorder, or may be a cutaneous sensory disorder.¹⁰⁴ An increased severity and frequency of skin disorders in dogs with nonsocial fear and separation anxiety has been identified.⁷⁹ In one study of dogs with recurrent pyoderma, psychogenic factors were identified and successfully treated.¹⁰⁵ While there may not be a confirmed association between pruritus and aggressive, anxious, or fearful behavior in dogs, concurrent behavioral abnormalities cannot be assumed to result from dermatoses and be expected to resolve with treatment of the skin disease alone; primary treatment of both conditions is needed.¹⁰⁶

Psychodermatoses have also been reported in dogs, where the onset of pruritic behavior was associated with emotionally unstable events. In that study, all skin and behavior problems were improved with behavioral therapy.¹⁰⁷ Primary behavior disorders of the skin might include compulsive disorders, displacement behaviors, reinforced behaviors, and possibly psychotic disorders. However, since medical problems can incite self-traumatic behavior, can be a component of psychodermatoses, or can develop secondary to a behavioral cause (e.g., deep pyoderma), they must first be diagnosed and treated.¹⁰⁸ Drug therapy with fluoxetine or

clomipramine can dramatically improve compulsive disorders, with a 50% or greater improvement expected.^{109,110} See [Chapter 11](#) for a more detailed description of compulsive disorders and their treatment.

Stress and aging

Aging is the sum of the deleterious effects of time upon the cellular function, microanatomy, and physiology of each body system. With age there is a general deterioration in physical condition, tissue hypoxia, alterations in cell membranes, increased production, and decreased clearance of reactive oxygen species, a decline in organ function, sensory function, and mental function, and a gradual deterioration of the immune system. With increasing age there is an increase in reactive oxygen species, leading to oxidative damage to organ tissues, including the brain.¹¹¹ These changes reduce the pet's ability to respond to stress and maintain homeostatic balance, thus resulting in increased susceptibility to tumors, disease, and behavior problems. Senior pets may be less able to cope with environmental, schedule, and social changes. See [Chapter 13](#) for details.

Direct effects of behavior on health

Another important consideration with respect to the effects of behaviors on health is that of pets that engage in potentially dangerous or self-injurious activities. With extreme fear, anxiety, and phobic behaviors, pets' attempts to avoid the stimulus or situation or escape from confinement may result in property damage as well as the pets being seriously injured during these attempts (see [Figure 12.4](#)). Foreign-body ingestion, poisoning, or accidental electrocution can be a result of exploration and scavenging (e.g., stealing, garbage raiding) or picas (see [Chapters 10 and 11](#)). In addition, self-traumatic disorders ranging from hair loss to tail mutilation may also be a result of primary behavior problems (see [Chapter 11](#)). And, of course, without adequate confinement or supervision, pets roaming the streets could be seriously injured or killed by cars, predators, and fights with other animals, or from the gunshots of property owners who might have been protecting their homes or livestock.

Stress and behavioral health

Chronic anxiety and stress can contribute to behavioral disorders in humans, including panic disorders, separation anxiety, social and other phobias, obsessive-compulsive disorders, generalized anxiety disorders, posttraumatic stress disorders, impulse control disorders, and sleep disorders, all of which may have animal correlates.¹¹² In one study, unexpected stressful environmental events led to an increase in avoidance behaviors and elimination of both urine and stools outside the litterbox in a group of colony cats.⁸⁰

In situations of conflict (competing motivations) and frustration (where the pet is unable to achieve its goals) or when the behavioral needs of the pet are not addressed, the pet may be unable to find appropriate mechanisms to cope. Responses to conflict and frustration might include aggression or avoidance (to distance the pet from the source of conflict), urine marking, redirected aggression, depression or apathy, or

displacement behaviors, such as self-trauma, spinning, tail chasing, or hyperesthesia, might be exhibited. Displacement behaviors might be more likely to arise in pets that are overly anxious or reactive and those that are genetically predisposed. In addition, genetics will likely contribute to the specific signs that the pet is most likely to display. For example, sucking disorders have been shown to have an inherited susceptibility in Doberman pinschers, tail chasing and spinning are more commonly associated with German shepherd dogs and bull terriers, and Oriental cats have a greater susceptibility to wool sucking.^{113–115} Recurrent or ongoing stress, along with genetic susceptibility, likely contributes to the development of compulsive disorders ([Chapter 11](#)).

Displacement behaviors that arise in response to a specific stimulus (e.g., visual, auditory, odor, tactile) or event (e.g., car ride, veterinary visit, owner departure or homecoming) might be resolved if inciting factors are avoided and owner responses are consistent and predictable. However secondary medical problems (e.g., pain, pruritus, infection) may be perpetuating factors.

When displacement behaviors begin to be exhibited outside the original context, and begin to interfere with normal daily activities and function, they may fall under the obsessive-compulsive spectrum such as the human impulse control disorders trichotillomania and skin picking, and the compulsive disorders of washing and grooming.^{110,116} Compulsive disorders generally have some degree of dyscontrol in their initiation or termination of the behavior. Signs are often repetitive, exaggerated, sustained, or so intense that they are difficult to interrupt. A behavior might be considered compulsive when it does not provide a mechanism for the pet to settle (achieve behavioral homeostasis) and the signs persist even after the anxiety-evoking situation is resolved. Compulsive disorders in pets might include: (1) neurological, and locomotory signs such as air snapping and spinning; (2) ingestive signs such as picas, licking, and wool sucking in cats; or (3) self-directed behaviors such as acral lick dermatitis and flank sucking in dogs, psychogenic alopecia, and tail chasing in cats. Since self-traumatic disorders often develop secondary medical complications, concurrent medical and behavioral therapy is often required.¹⁰⁸ Abnormal serotonin transmission may be the primary mechanism by which stereotypies are induced. Opioid involvement, dopaminergic stimulation, and altered glutaminergic neurotransmission may also play a role. For details on the diagnosis and treatment of compulsive disorders, see [Chapter 11](#).

Stress management

A program to reduce stress and maintain quality of life should optimize pleasant feelings and minimize unpleasant ones.¹¹⁷ Since stress can play an important role in the development of both medical and behavior problems and both medical and behavior problems may further add to the pet's stress, close attention to identifying and resolving stress should be one of the first considerations in the treatment (and prevention) of behavior problems. A behavioral program to ensure maximal quality of life should include social companionship, mental and physical enrichment,

identifying and reducing stressors, and providing the pet with control. Pets can best handle stress if they have a sense of control, including appropriate opportunities to avoid unpleasant situations. Pets should also have control over their environment by being offered opportunities to engage in their normal repertoire of behaviors and by allowing them to make choices (e.g., climbing, perching, bedding, play) that are acceptable to the pet and to the owner. The focus should be on encouraging and reinforcing what is desirable and preventing or avoiding what is unacceptable. If consequences are consistent and predictable, desirable behaviors can be increased with reinforcers and undesirable behaviors can be reduced. Since positive punishment is likely to increase fear and anxiety its use should be limited, its application should be consistent and appropriate for the temperament of the pet, and, if possible, should not be associated with family members (except in circumstances where safety is an issue). Booby traps such as double-sided tape, an upside-down carpet runner, or motion detector alarms and air sprayers may be sufficiently uncomfortable to deter repetition of the behavior without causing undue fear or anxiety. Conversely, unpredictable consequences add to anxiety as the pet becomes more frustrated at being unable to predict or control the outcome effectively. See [Chapter 4](#) for details.

A stress prevention and treatment program should focus on consistency, gradual change, and enrichment in the form

of: (1) social interactions; (2) physical activity; (3) object and exploratory play that is motivating to each of the senses (sight, smell, texture, taste); and (4) activities that are designed to meet the needs of the species and individual (e.g., climbing, predatory play toys, and perches for cats, and chewing, retrieving, or herding activities for dogs).

Pet owners should focus on minimizing or avoiding environmental events that might incite stress, such as loud or unfamiliar noises, sudden or unexpected movements, novel or unfamiliar places and objects, interactions with unfamiliar animals or pets, and sudden or dramatic changes in routine. The response of an individual to stress may vary with genetics, early handling, socialization, and previous experience. When changes are likely to be stressful for individual pets, they should be made gradually whenever possible. While some degree of novelty is generally appealing, maintaining familiarity and making changes slowly are particularly important for cats and aged pets who might be more sensitive to change. For cats, exposure to stressors might be avoided by confining cats to a small area with as much environmental familiarity as possible (furniture, toys, odors) and gradually reintroducing it to the new or altered environment. Alternately, new pets might be housed separately to allow the existing cat to adapt to the smell and sounds of the new pet, before beginning to allow visual exposure. Positive outcomes can help the cat to adapt more quickly to a new situation.

References

- Hart B. Biological basis of the behavior of sick animals. The behavioural evolution of herbal medicine: behavioural perspective. *Neurosci Biobehav Rev* 1999;12:123–37.
- Denou E, Jackson W, Lu J, et al. The intestinal microbiota determines mouse behaviour and BDNF levels. *Gastroenterology* 2011;140:S57.
- Collins SM, Denou E, Verdu EF, et al. The putative role of the intestinal microbiota in the irritable bowel syndrome. *Dig Liver Dis* 2009;41:850–3.
- Seruga B, Zhang H, Bernstein LJ, et al. Cytokines and their relationship to the symptoms and outcome of cancer. *Nat Rev Cancer* 2008;8:887–99.
- Mori Y, Ma J, Tanaka S, et al. Hypothalamically induced emotional behavior and immunological changes in the cat. *Psychiatry Clin Neurosci* 2001;55:325–32.
- Dow SW, Dreitz MJ, Hoover EA. Exploring the link between FIV infection and neurologic disease in cats. *Vet Med* 1992;87:1181–4.
- Steigerwald ES, Sarter M, March P, et al. Effects of FIV on cognition and behavioral function in cats. *J Acquir Immune Defic Syndr Hum Retrovirol* 1999;20:411–19.
- Hendricks JC, Lager A, O'Brien D, et al. Movement disorders during sleep in cats and dogs. *J Am Vet Med Assoc* 1989;194:686–9.
- Schubert TA, Chidester M, Chrisman CL. Clinical characteristics, management and long-term outcome of suspected rapid eye movement sleep behaviour disorder in 14 dogs. *J Small Anim Pract* 2011;52:93–100.
- Nadkarni S, Arnedo V, Devinsky O. Psychosis in epilepsy patients. *Epilepsia* 2007;48(Suppl. 9):1719.
- Barry JJ, Ettinger AB, Friel P, et al. Consensus statement: the evaluation and treatment of people with epilepsy and affective disorders. *Epilepsy Behav* 2008;13(Suppl. 1):S1–9.
- Elliott B, Joyce E, Shorvon S. Delusions, illusions and hallucinations in epilepsy: 1. Elementary phenomena. *Epilepsy Res* 2009;85:162–71.
- Garosi LS, Rosseisl JH, de Lahunta A, et al. Primary orthostatic tremor in Great Danes. *J Vet Intern Med* 2005;19:606–9.
- Geiger KM, Klopp LS. Use of selective serotonin reuptake inhibitor for treatment of episodes of hypertonia and kyphosis in a young Scottish Terrier. *J Am Vet Med Assoc* 2009;235:168–71.
- Fatjo J, Stub C, Manteca X. Aggression and hypothyroidism. *Vet Rec* 2002;151:547–8.
- Aronson LP, Dodds WJ. The effect of hypothyroid function on canine behavior. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. p. 131–8.
- Bauer M, Goetz T, Glenn T, et al. The thyroid–brain interaction in thyroid disorders and mood disorders. *J Neuroendocrinol* 2008;20:1101–14.
- Beaver B, Haug L. Canine behaviors associated with hypothyroidism. *J Am Anim Hosp Assoc* 2005;39:431–4.
- Carter GR, Luescher UA. Elevated levels of total serum thyroxine in dogs with behaviour problems. *Proceedings of ACVB/AVSAB*, 2008;New Orleans, 7.
- Sueda KLC, Hart BL, Cliff KD. Characterisation of plant eating in dogs. *J Appl Anim Behav Sci* 2008;111:120–32.
- Hart BL, Tran AA, Bain MJ. Canine conspecific coprophagia; who, when and why dogs eat stools. *Proc ACVB/AVSAB Behavior Symposium* 2012, San Diego, 8.
- Becuwe-Bonnet V, Belanger MC, Frank DE, et al. Gastrointestinal disorders in dogs with excessive licking of surfaces. *J Vet Behav* 2012 <http://dx.doi.org/10.1016/j.jveb.2011.07.003>.
- Horwitz D. Behavioral and environmental factors associated with elimination behavior problems in cats: a

- retrospective study. *Appl Anim Behav Sci* 1997;52:129–1.
24. Tynes VV, Hart BL, Pryor PA, et al. Evaluation of the role of lower urinary tract disease in cats with urine marking behavior. *J Am Vet Med Assoc* 2003;223:457–61.
 25. Doxsee A, Yager JA, Best SJ, et al. Extratesticular interstitial and Sertoli cell tumors in previously neutered dogs and cats; a report of 17 cases. *Can Vet J* 2006;47:763–6.
 26. Waisglass SE, Landsberg GM, Yager JA, et al. Underlying medical conditions in cats with presumptive psychogenic alopecia. *J Am Vet Med Assoc* 2006;228:1705–9.
 27. Denerolle P, White SD, Taylor TS, et al. Organic diseases mimicking acral lick dermatitis in six dogs. *J Am Anim Hosp Assoc* 2007;243:215–20.
 28. Shumaker AK, Angus JC, Coyne KS, et al. Microbiological and histopathological features of canine acral lick dermatitis. *Vet Dermatol* 2008;19:288–98.
 29. Drew LJ, MacDermott AB. Neuroscience: unbearable lightness of touch. *Nature* 2009;462:580–1.
 30. Notari L, Mills D. The effects of exogenous corticosteroids on dog behaviour; a preliminary study. *J Vet Behav* 2010;10:63.
 31. Mathews KA. Pain assessment and general approach to management. *Vet Clin North Am Small Anim Pract* 2000;30:729–55.
 32. Conzemius MG, Sammarco JL, Perkowski SZ, et al. Correlation between subjective and objective measures used to determine severity of postoperative pain in dogs. *J Am Vet Med Assoc* 1997;210:1619–22.
 33. Cambridge AJ, Tobias KM, Newberry RC. Subjective and objective measurements of postoperative pain in cats. *J Am Vet Med Assoc* 2000;217:685–90.
 34. Helyer P, Rodan I, Brunt J, et al. AAHA/AAFP pain management guidelines for dogs and cats. *J Feline Med Surg* 2007;9:466–80.
 35. Gaynor J. Pain scoring and other means of evaluation. *Vet Forum* 2001 October;45–7.
 36. Holton LL, Scott EM, Nolan AM, et al. Comparison of three methods used for assessment of pain in dogs. *J Am Vet Med Assoc* 1998;212:61–6.
 37. Clarke SP, Bennett D. Feline osteoarthritis: a prospective study of 28 cases. *J Small Anim Pract* 2006;47:439–45.
 38. Bennett D, Morton C. A study of owner observed behavioural and lifestyle changes in cats with musculoskeletal disease before and after analgesic therapy. *J Feline Med Surg* 2009;11:997–1004.
 39. Kukanich B. Analgesia and pain assessment in veterinary research and clinical trials. *The Vet J* 2011;188:1–2.
 40. Robertson S. Managing pain in feline patients. *Vet Clin North Am Sm Anim Pract* 2008;38:1267–90.
 41. Mathews K. Dealing with pain in the clinic. *Vet Forum* 2001;November:41–7.
 42. Hansen BD, Hardie EM, Carroll GS. Physiological measurements after ovariohysterectomy in dogs: what's normal. *Appl Anim Behav Sci* 1997;51:101–9.
 43. Holton LL, Scott EM, Nolan AM, et al. Relationship between physiological factors and clinical pain in dogs scored using a numerical rating scale. *J Small Anim Pract* 1998;39:469–74.
 44. Muir W, Wiese AJ, Wittum TE. Prevalence and characteristics of pain in dogs and cats examined as outpatients at a veterinary teaching hospital. *J Am Vet Med Assoc* 2004;224:1459–63.
 45. Hardie EM, Hansen BD, Carroll GS. Behaviour after hysterectomy in the dog: what's normal. *Appl Anim Behav Sci* 1997;51:111–28.
 46. Morton CM, Reid J, Scott EM, et al. Application of a scaling model to establish and validate an interval level pain score for the assessment of acute pain in dogs. *Am J Vet Res* 2005;66:2154–65.
 47. Murrell JC, Psatha EP, Scott EM, et al. Application of a modified form of the Glasgow pain scale in a veterinary teaching hospital in the Netherlands. *Vet Rec* 2008;162:403–8.
 48. Holton L, Reid J, Scott EM. Development of a behaviour-based scale to measure acute pain in dogs. *Vet Rec* 2001;148:525–91.
 49. Reid J, Nolan AM, Hughes JML, et al. Development of the short-form Glasgow Composite Measure Pain Scale (CMPS-SF) and derivation of an analgesic intervention score. *Anim Welfare* 2007;16:97–104.
 50. Schiavenato M, Byers JE, Scovanner P, et al. Neonatal pain facial expression: evaluating the primal face of pain. *Pain* 2008;138:460–71.
 51. Lascelles BDX, Waterman AE. Analgesia in cats. In *Practice* 1998;19:203–13.
 52. Taylor PM, Robertson SA. Pain management in cats – past, present and future. Part 1. The cat is unique. *J Feline Med Surg* 2004;6:313–20.
 53. Vaisanen M, Tuomikoski SK, Vainio OM. Behavioral alterations and severity of pain in cats recovering at home following elective ovariohysterectomy or castration. *J Am Vet Med Assoc* 2007;231:236–42.
 54. Hielm Bjorkman AK, Kuusela E, Liman A, et al. Evaluation of methods for assessment of pain associated with chronic osteoarthritis in dogs. *J Am Vet Med Assoc* 2003;222:1552–8.
 55. Brown DC, Boston RC, Coyne JC, et al. Ability of the canine brief pain inventory to detect response to treatment in dogs with osteoarthritis. *J Am Vet Med Assoc* 2008;15:1278–83.
 56. Robertson S, Lascelles D. Long term pain in cats. How much do we know about this important welfare issue? *J Feline Med Surg* 2010;12:188–98.
 57. Lascelles BD, Hansen BD, Roe S, et al. Evaluation of client-specific outcome measures and activity monitoring to measure pain relief in cats with osteoarthritis. *J Vet Intern Med* 2007;21:410–16.
 58. Zamprogno H, Hansen BD, Bondell HD, et al. Item generation and design testing of a questionnaire to assess degenerative joint disease-associated pain in cats. *Am J Vet Res* 2010;71:1417–24.
 59. Lascelles BDX, DePuy A, Thomson B, et al. Evaluation of a therapeutic diet for feline degenerative joint disease. *J Vet In Med* 2010;24:487–95.
 60. Hardie EM, Roe SC, Martin FR. Radiographic prevalence of degenerative joint disease in geriatric cats: 100 cases (1994–1997). *J Am Vet Med Assoc* 2002;220:628–32.
 61. Clarke SP, Mellor D, Clements DN, et al. Radiographic prevalence of degenerative joint disease in a hospital population of cats. *Vet Rec* 2005;157:793–99.
 62. Godfrey DR. Osteoarthritis in cats: a retrospective radiological study. *J Small Anim Pract* 2005;46:425–9.
 63. Lascelles D, Robertson S. DJD associated pain in cats: what can we do to promote patient comfort? *J Feline Med Surg* 2010;12:200–12.
 64. Shafford HI, Lascelles BDX, Hellyer PW. Preemptive analgesia: managing pain before it begins. *Vet Med* 2001;June:478–91.
 65. Hansen B. The use of NSAIDs in pain management. *Vet Forum* 2001;October:48–51.
 66. Oke, SL. Indications and contraindications for the use of orally administered joint health products in dogs and cats. *J Am Vet Med Assoc* 2009;234:1393–7.
 67. Roush JK, Cross AR, Renberg WC, et al. Evaluation of the effects of dietary supplementation with fish oil omega-3 fatty acids on weight bearing in dogs with osteoarthritis. *J Am Vet Med Assoc* 2010;236:67–73.
 68. Roush JK, Dodd CE, Fritsch DA, et al. Multicenter veterinary practice assessment of the effects of omega-3 fatty acids on osteoarthritis in dogs. *J Am Vet Med Assoc* 2010;236:59–66.
 69. Fritsch DA, Allen TA, Dodd CE, et al. A multicenter study of the effect of dietary supplementation with fish oil omega-3 fatty acids on carprofen dosage in dogs with osteoarthritis. *J Am Vet Med Assoc* 2010;236:535–9.
 70. Siracusa C, Manteca X, Cuenca R, et al. Effect of a synthetic appeasing pheromone on behavioral, neuroendocrine, immune, and

- acute-phase perioperative stress responses in dogs. *J Am Vet Med Assoc* 2010;237:673–81.
71. Grubb T. Chronic neuropathic pain in veterinary patients. *Topics Companion Anim Med* 2010;25:45–52.
 72. Cashmore RG, Harcourt-Bowen TR, Feeman PM. Clinical diagnosis and treatment of suspected neuropathic pain in three dogs. *Aust Vet J* 2009;87:45–50.
 73. Berteselli GV, Servidaq F, Dall'Ara P, et al. Evaluation of the immunological, stress and behavioral parameters in dogs (*Canis familiaris*) with anxiety-related disorders. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. p. 18–22.
 74. Riva J, Bondiolotti G, Micelazzi M, et al. Anxiety related behavioural disorders and neurotransmitters in dogs. *J Appl Anim Behav Sci* 2008;114:168–81.
 75. Battaglia CL. Periods of early development and the effects of stimulation and social experiences in the canine. *J Vet Behav* 2009;4:203–10.
 76. Pageat P. The possible role of oxytocin as stress indicator in puppies. *ACVB / AVSAB Veterinary Behavior Symposium*, San Diego 2012, 9.
 77. Pageat P, Lafont C, Falewee C, et al. An evaluation of serum prolactin in anxious dogs and response to treatment with selegiline or fluoxetine. *Appl Anim Behav Sci* 2007;105:342–50.
 78. Beerda B, Schilder M, van Hoof J, et al. Manifestations of chronic and acute stress in dogs. *Appl Anim Behav Sci* 1997;52:307–19.
 79. Dreschel NA. Anxiety, fear, disease and lifespan in domestic dogs. *J Vet Behav* 2009;4:249–50.
 80. Stella JL, Lord LK, Buffington T. Sickness behaviours in response to unusual environmental events in healthy cats and cats with FIC. *J Am Vet Med Assoc* 2011;1:67–73.
 81. Weitropp JL, Kass PH, Buffington CAT. Evaluation of the effects of stress in cats with idiopathic cystitis. *Am J Vet Res* 2006;67:731–6.
 82. Buffington CAT, Pacak K. Increased plasma norepinephrine concentration in cats with interstitial cystitis. *J Urol* 2001;165(6):2051–4.
 83. Seawright A, Murray J, Casey RA. A case controlled study of the risk factors for feline idiopathic cystitis. *Proceedings of 7th International Veterinary Behavior Meeting*, Edinburgh. Belgium: ESVCE; 2009. p. 136–41.
 84. Cameron ME, Casey RA, Bradshaw JWS, et al. A study of the environmental and behavioral factors that may be associated with feline idiopathic cystitis. *J Small Anim Pract* 2004;45:144–7.
 85. Buffington CAT, Westropp JL, Chew DJ, et al. Clinical evaluation of multimodal environmental modification (MEMO) in the management of cats with idiopathic cystitis. *J Feline Med Surg* 2006;8:261–8.
 86. Gunn-Moore DA, Cameron ME. A pilot study using synthetic feline facial pheromone for the management of feline idiopathic cystitis. *J Feline Med Surg* 2004;6:133–8.
 87. Bhatia V, Tandon RK. Stress and the gastrointestinal tract. *J Gastroenterol Hepatol* 2005;20:332–9.
 88. Monte F, Basse C, Lynch A. Stress as a factor in inflammatory bowel disease; pilot study to investigate whether affected dogs differ from unaffected controls in their response to novel stimuli. In: Hamburg, Germany: *Proceedings of the 2010 European Veterinary Behavior Meeting*; 2010. p. 46–9.
 89. Joachim RA, Handjiski B, Blois SM, et al. Stress-induced neurogenic inflammation in murine skin skews dendritic cells towards maturation and migration; key role of ICAM1/LFA-1 interactions. *Am J Pathol* 2008;173:379–1388.
 90. Mitschenko AV, Lwow An, Kupfer J, et al. Atopic dermatitis and stress? How do emotions come into skin? *Hautarzt* 2008;59:314–18.
 91. Arndt J, Smith N, Tausk F. Stress and atopic dermatitis. *Curr Allergy Asthma Rep* 2008;8:312–17.
 92. Panconesi E, Hautman G. Psychophysiology of stress in dermatology. *Dermatol Clin* 1996;14:399–422.
 93. Buske-Kirschbaum A, Hellhammer DH. Endocrine and immune responses to stress in chronic inflammatory skin disorders. *Ann N Y Acad Sci* 2003;992:231–40.
 94. Buske-Kirschbaum A, Gieben A, Hollig H, et al. Altered responsiveness of the hypothalamic–pituitary–adrenal axis and the sympathetic adrenomedullary system to stress in patients with atopic dermatitis. *J Clin Endocrinol Metab* 2002;87:4245–51.
 95. Buske-Kirschbaum A, Gieben A, Hollig H, et al. Stress-induced immunomodulation in patients with atopic dermatitis. *J Neuroimmunol* 2002;129:161–7.
 96. Reich A, Szepletowski JC. Vasoactive peptides in the pathogenesis of psoriasis. *G Ital Dermatol Venereol* 2008;143:289–98.
 97. Pasaoglu G, Bavbek S, Tugcu H, et al. Psychological status of patients with chronic urticaria. *J Dermatol* 2006;22:765–71.
 98. Schmid-Ott G, Jaeger T, Boehm K, et al. Immunological effects of stress on psoriasis. *Br J Dermatol* 2009;160:782–5.
 99. Scott DW, Miller WH, Griffin CE. *Small animal dermatology*. 6th ed. Toronto, W.B.: Saunders; 2001. p. 62.
 100. Barone S, Bacon SL, Campbell TS, et al. The association between anxiety, sensitivity and atopy in adult asthmatics. *J Behav Med* 2008;31:331–9.
 101. Garg A, Chren MM, Sands LP, et al. Psychological stress perturbs epidermal permeability barrier homeostasis: implications for the pathogenesis of stress associated skin disorders. *Arch Dermatol* 2001;137:78–82.
 102. Denda M, Tsuchiya T, Elias PM, et al. Stress alters cutaneous permeability homeostasis. *Am J Physiol Regulatory Integrative Comp. Physiol* 2000;278:R367–72.
 103. Koblenzer CS. Psychotherapy for intractable inflammatory dermatoses. *J Am Acad Dermatol* 1995;32:609–12.
 104. Virga V. Behavioral dermatology. *Vet Clin North Am* 2003;33:231–51.
 105. Nagata M, Shibata K. Importance of psychogenic factors in canine recurrent pyoderma. *Vet Dermatol* 2004;15:42.
 106. Klinck MP, Shofer FS, Reisner IR. Association of pruritus with anxiety or aggression in dogs. *J Am Vet Med Assoc* 2008;233:1105–11.
 107. Nagata M, Shibata K, Irimajiri M, et al. Importance of psychogenic dermatoses in dogs with pruritic behavior. *Vet Dermatol* 2002;13:211–19.
 108. Schumaker AK, Angus JC, Coyner KS, et al. Microbiological and histopathological features of canine acral lick dermatitis. *Vet Dermatol* 2008;19:288–98.
 109. Irimajiri M, Luescher AU, Douglass G, et al. Randomized, controlled clinical trial of the efficacy of fluoxetine for treatment of compulsive disorders in dogs. *J Am Vet Med Assoc* 2009;235:707–9.
 110. Overall KL, Dunham AE. Clinical features and outcome of dogs and cats with obsessive-compulsive disorder: 126 cases (1989–2000). *J Am Vet Med Assoc* 2002;221:1445–52.
 111. Head E, Liu J, Hagen TM, et al. Oxidative damage increases with age in a canine model of human brain aging. *J Neurochem* 2002;82:375–81.
 112. Overall KL. Dogs as “natural” models of human psychiatric disorders: assessing validity and understanding mechanism. *Prog Neuropsychopharmacol Biol Psychiatry* 2000;24:727–76.
 113. Dodman NH, Karlsson EK, Moon-Fanelli A, et al. A canine chromosome 7 locus confers compulsive disorders susceptibility. *Mol Psychiatry* 2009;15:8–10.
 114. Bradshaw JWS, Neville PF, Sawyer D. Factors affecting pica in the domestic cat. *J Appl Anim Behav Sci* 1997;52:373–9.

115. Moon-Fanelli AA, Dodman NH, Famula TR. Characteristics of compulsive tail chasing and associated risk factors in Bull Terriers. *J Am Vet Med Assoc* 2011;238:883–9.
116. Hewson CJ, Luescher UA. Compulsive disorders in dogs. In: Voith VL, Borchelt PL, editors. *Readings in companion animal behavior*. Trenton, NJ: Veterinary Learning Systems; 1996. p. 153–8.
117. McMillan FD. Maximizing quality of life in ill animals. *J Am Anim Hosp Assoc* 2003;39:227–35.

Resources and recommended reading

- International Veterinary Academy of Pain Management. www.ivapm.org.
- Jones CJ, Budsberg SC. Physiologic characteristics and clinical importance of the cyclooxygenase isoforms of dogs and cats. *J Am Vet Med Assoc* 2000;217:721–9.
- Mathews KA. Update on management of pain. *Vet Clin North Am* 2008;38:6.
- Muir WW, Woolf CJ. Mechanisms of pain and their therapeutic implications. *J Am Vet Med Assoc* 2001;219:1346–56.
- Papich M. What does cox selectivity mean? *Vet Forum* 2001;November:39–41.
- Schoen A. *Veterinary acupuncture – ancient art to modern medicine*. 2nd ed. St Louis: Mosby; 2001.
- Veterinary Anesthesia and Analgesia Support Group. www.vasg.org.

Treatment – behavior modification techniques

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Introduction

In the next few chapters we will discuss techniques for treating behavior problems, including behavior counseling (client advice on behavior and environmental management) in this chapter, drug therapy in [Chapter 8](#), complementary and alternative therapy in [Chapter 9](#), and diet-related behavior problems and their management in [Chapter 10](#).

Education of the family

The ultimate success of treating the problem is directly related to the degree of owner comprehension and compliance. Since family members themselves will carry out the behavioral modification in most cases, they must understand their roles and the techniques they will be required to perform.

Table 7.1 Examples of problems and information for owners

Problem	Owner education required
Fear-related aggression	• Social communication and signaling, classical conditioning
Canine housesoiling	• How dogs learn (reinforcing desirable), normal elimination and eating patterns, supervision and confinement training
Feline inappropriate toileting	• Normal elimination behavior, substrate preferences, reasons for avoidance, odor elimination
Feline spraying	• Role of neutering, social behavior and communication, influence of cat density/resources, pheromones
Unruly dog	• Normal greeting behavior, obedience training, halter devices, principles of learning – reward desirable
Canine destructive behavior	• Normal play, enrichment and exercise, providing alternative acceptable outlets for chewing, rewarding desirable, preventing undesirable/teaching avoidance, the concept of “guilt,” the role of anxiety
Feline play aggression	• Normal feline play, feline predatory behavior, feline social behavior, how to play with a cat properly, adding a second cat

The family must understand normal needs and behavior for cats and dogs. Providing pets with appropriate outlets for play, exercise, elimination, chewing, and digging may be all that is required to solve some problems. It is also necessary to provide some explanation of how animals communicate and learn. The use of some behavior modification tools will also likely need to be discussed.

With education, clients can understand more clearly which problems are most likely to be completely eliminated, which are likely to be only decreased, and which are unlikely to be changed. Once the family is well informed about the situation and treatment options, the decision may be made to live with the problem rather than institute the necessary steps for corrections, while others may decide that rehoming or euthanasia are safer, more appropriate choices for their circumstances (Table 7.1).

Modification of the environment

Environmental modification involves managing various aspects of the pet’s environment in order to diminish the performance or intensity of the behavior. A number of variables can be controlled, including confinement areas, exposure to eliciting stimuli, access to people, access to other animals, access to targets of the behavior, and modification of targets (Table 7.2).

Table 7.2 Ways to modify the environment to encourage desirable and prevent undesirable behavior

Change	Example
Identify and remove the cause	• For urine marking, separate or remove cats that are unable to cohabitate, prevent sight or sound of outdoor stimuli if triggers • For inappropriate toileting, find more acceptable litter and substrate • Ignore the pet when exhibiting attention-soliciting behaviors
Reduce the opportunity to misbehave	• Provide a safe confinement area • Keep within eyesight with a leash • Place objects out of reach – dog- or cat-proof • Build a privacy fence to reduce territorial barking • Prevent access to stimuli or problem areas by using avoidance devices • Physically prevent or reduce access to stimuli using barriers, window covers, or with products to reduce exposure to visual or auditory stimuli (see products)
Provide an environment conducive to the pet’s needs	• Install a dog or cat door to manage housesoiling by providing continuous access to the outdoors • Provide stimulating and interactive toys to decrease destructive behavior • For feline housesoiling, move the litterbox to a more acceptable area or remove any deterrents • Provide scratching post with substrate and location that meets cat’s preferences as well as perching and climbing areas • More physical and social enrichment for the young, unruly dog
Change the behavioral function of an area	• Place food, toys, or bedding in areas where the owner does not want the pet to eliminate
Make the area or object aversive	• Motion-activated alarms or sprays to keep the pet off furniture and counters • Aversive-tasting sprays to stop chewing

Modification of the pet’s behavior

Change the behavior with surgery

Castration decreases gonadal hormones which might decrease sexually dimorphic behaviors, including sexual arousal, masturbation, urine marking, mounting, and perhaps some forms of aggression.^{1–3} However, the results of neutering studies have been somewhat conflicting. For example, one recent study found no effect of neutering on intermale aggression, roaming, or mounting.⁴ Another study suggested that neutering does not appear to decrease the

Table 7.3 Potential behavioral benefits of castration¹⁻³

Behavior	Effects of castration
Undesirable sexual behavior	- Reduced interest in females, roaming, mounting, and masturbation - Roaming in cats can be reduced in over 90% of cases; 70–80% of dogs may have a reduction in roaming; only about 40% cease - Mounting in dogs is reduced in 70–80% of cases but resolved in only 25%
Urine marking	Castration reduces marking in about 70–80% of dogs but only about 40% are resolved. Urine marking is reduced in 90% of cats
Aggression	- Intermale aggression may be reduced in about 60% of dogs and 90% of cats - Aggression toward family dogs and family members may be reduced in about 30% of dogs - Aggression toward unfamiliar dogs and intruders may be reduced in 10–20% of dogs

¹Hart BL. Effects of neutering and spaying on the behavior of dogs and cats: questions and answers about practical concerns. *J Am Vet Med Assoc* 1991;198:1204.

²Hart BL, Eckstein RA. The role of gonadal hormones in the occurrence of objectionable behaviours in dogs and cats. *Appl Anim Behav Sci* 1997;52:351.

³Hopkins SG, Schubert TA, Hart BL. Castration of adult male dogs: effects on roaming, aggression, urine marking, and mounting. *J Am Vet Med Assoc* 1976;168:1108–1110.

likelihood of aggression in male dogs with perhaps the exception of some cases of territorial and intermale aggression.⁵ In yet another study, the odds ratio of biting a member of the household was highest for neutered male dogs followed by neutered female dogs, intact male dogs, and intact females. Some studies also suggest that spayed females are more likely to display certain types of aggression when compared with intact females.⁶⁻⁸ While the cause has not been determined, it may be due to a decrease in estrogen and oxytocin concentrations, both of which may have some antianxiety effects.⁹ Ovariohysterectomy of dogs and cats eliminates behaviors associated with estrus cycles and pseudocyesis in dogs and reduces risk of mammary cancer if before 2nd or 3rd heat cycle. In dogs, castration is useful in the prevention or treatment of prostatic disease, testicular cancer, perianal tumors, and perineal hernias (Table 7.3).

Other surgical procedures that have been used for certain behavior problems include olfactory tractotomy for refractory spraying cases, dental disarming, declawing, and devocalization. Many of these procedures are only considered as a last-resort alternative to euthanasia, and in some countries are deemed to be inhumane or even illegal. Surgery or medical therapy might also be necessary when an underlying medical condition (e.g., hyperthyroidism, anal sacculitis, chronic otitis) is causing or contributing to the behavioral signs.

Modify the pet with behavioral modification techniques

Behavioral modification is the principal means of correcting or controlling undesirable behavior. Therefore it is

critical for consultants to understand normal species-typical behavior and the basic principles of learning and motivation if they intend to perform behavioral counseling in practice. Learning and behavior modification are discussed in Chapter 4 and in more detail below.

The use of behavior products to modify behavior

There are a wide variety of products that can be useful in the prevention and management of undesirable behavior in pets. Products have been developed for control and training (head halters, body harnesses), positive reinforcement (clicker, Manner's minder), environmental enrichment, deodorizing soiled areas, desensitization and counterconditioning (e.g., CDs and DVDs for noise desensitization). In addition, new tools have been designed that might play a role in reducing anxiety (calming music CDs, anxiety wrap, Thundershirt) or for reducing the stimuli that might cause anxiety (Thunder band, Mutt Muffs, calming cap, Storm Defender cape). These are described throughout the text and a list of some of the product manufacturers can be found in Appendix B. Although the focus of behavior therapy should be placed squarely on the training and reinforcement of what is desirable, pet owners also need strategies for prevention, interruption, and avoidance of undesirable behaviors. Therefore, a brief overview of these products is provided in Box 7.1.

Shock and discomfort

Most pets quickly learn to avoid situations or locations that cause fear or discomfort. To this end some training devices use varying levels of discomfort or shock. These products fall into the categories of electronic avoidance devices, including outdoor wiring and transmitters that activate a "shock" collar, intended to keep pets within the boundaries of a property; indoor transmitters that activate a shock collar, intended to keep pets out of selected areas of the home; mats that produce a static electric type of stimulation that are designed to sit on counters, furniture, windowsills or around plants; and collars that emit shock when a dog barks. In addition there are remote-activated shock collars that have even greater potential for misuse and abuse since they are activated by humans and not the behavior itself. On a similar note, collars with prongs also act by causing discomfort and pain. Shock devices are considered inhumane and are illegal to use in many countries, but are still widely available in North America.

One argument for the use of these products is that when all other practical solutions have been exhausted, and less intense deterrents have been ineffective, these products offer an alternative that may quickly and effectively resolve problems by teaching the pet to avoid an area or cease a behavior. Therefore, their use might be limited to situations where safety is a factor (to people, other pets, or the pet itself), the problem might otherwise lead to relinquishment (e.g., a barking dog in a high-rise apartment), and to allow dogs the freedom to run free on a large unfenced property. However, in reality most of these problems can be prevented, managed, or improved without the need for undue pain or discomfort. In addition, since these products deter behaviors by causing

Box 7.1 Products to manage undesirable behavior (client handout #21, printable version available online)

There are a wide variety of products that can be useful in correcting or managing undesirable behavior in pets. Devices that are activated by the owner can be used to interrupt a behavior so that the desirable response can be achieved or may serve as a punisher so that the pet is less likely to repeat the act in the future. However, behavior is likely to continue in the owner's absence, especially if it is rewarding (e.g., garbage raiding), comforting (e.g., sleeping on the couch) or brings relief (e.g., elimination) since there are no unpleasant consequences associated with the behavior when the owner is not watching. Therefore remote punishment or avoidance devices (booby traps) might be more effective, so that the pet associates the punishment with the act, and not with the owner. Since pain, discomfort, and excessive fear compromise the pet's welfare, the minimum level of intensity required to achieve the desired outcome should be used and they should immediately be stopped if they cause excessive fear. However, before any of these devices are considered as a means of deterring undesirable behavior, you must first focus on: (1) how to train and reinforce alternative desirable behaviors; (2) how to cease rewarding undesirable behaviors; and (3) how to prevent rather than punish. Since positive punishment causes a decrease in behavior by making the pet fearful of repeating the behavior, punishment should not be used to "correct" behaviors that are motivated by fear or anxiety. In addition, if any of these products or techniques: (1) are ineffective in interrupting or stopping the undesirable behavior after the first or second attempt; (2) cause undue fear or anxiety; or (3) lead to threats or aggression, they should be immediately discontinued.

Disruptive stimuli

The goal of a disruptive stimulus is to interrupt the undesirable response. This allows an opportunity for the performance of a desirable response which can then be reinforced.

Remote punishment

This can be used to deter undesirable behavior without causing fear of, or association with, the owner. For example, punishment can be administered from a distance by using a remote-activated spray collar (lemon, citronella, or air). Timing must be immediate and the aversive stimulus should be withdrawn as soon as the behavior ceases (negative reinforcement). Garbage and litter box raiding, urine marking, and coprophagia in dogs are examples of problems that might be corrected with a remote-activated device.

Pet-activated devices – avoidance

Environmental punishment or booby traps can be used to deter undesirable behavior or entry into restricted areas even in the owner's absence. The goal is for the pet to learn that the area or the behavior itself is associated with unpleasant consequences. Motion-activated alarms or sprays or unpleasant surfaces such as sticky tape or upside-down carpet runners are often used for this purpose.

Disruptors and punishment devices**Owner-activated devices**

1. Direct devices can be used to interrupt undesirable behaviors (e.g., a pet jumping up) so that desirable behaviors can be reinforced or as a means of reducing repetition of behaviors that might be damaging to the house or unsafe for the pet (e.g., garbage raiding, stealing). Some of the commercial devices available include audible, ultrasonic, or spray deterrents. You can also use a "shake" can full of pennies, pocket rape alarm, or air horn as audible deterrents or a water gun or can of compressed air.

2. Remote devices provide a way to stop an undesirable behavior while the owner remains out of sight. These include remote-controlled citronella or scentless spray collars to deter undesirable behavior, or a remote-control vibrating collar that might be used as a positive signal to train deaf dogs. Something thrown on the floor near the pet (e.g., shake can or bean bag) may also serve to interrupt the behavior. Other products include water rifles and remote-controlled switches that can be used to activate an alarm, hair dryer, water sprayer, or tape recording. By placing these devices in the area where the pet might misbehave (e.g., plant, garbage) and activating them with a remote switch, the pet might learn to avoid the area. To administer remote punishment at the right time, the owner will need to monitor from a distance while remaining out of sight; a web cam or pet monitor might be useful.

Pet-activated devices

1. Outdoor devices. Electronic containment systems can be used to keep dogs within selected boundaries, or away from selected areas. A transmitter wire is buried along the boundary, and a radio transmitter sends a signal that is received by the collar. As the pet approaches, there is first a warning tone, and then activation of a spray collar if the pet does not retreat out of range. Motion-activated alarms and sprays, ultrasonic deterrents, a motion-activated water sprinkler, and pet repellents can keep pets out of selected areas on the property (e.g., gardens) or stray animals off the property.
2. Indoor devices. Devices designed to keep pets away from areas (i.e., avoidance) include indoor electronic containment systems that activate a spray collar as the pet approaches as well as motion-activated sprays and alarms. Alarms and detectors designed for home security may also be effective. You might also find that a pet may avoid an area if you place down less appealing substrates (e.g., aluminum foil, plastic, or rubber mats) or uncomfortable substrates (e.g., upside-down vinyl carpet runners, double-sided tape) or spray the area with a pet repellent or chew deterrents such as hot sauces, menthol, oil of eucalyptus, cayenne pepper, or commercially available antichew sprays. Some pets, especially cats, may avoid areas with strong perfumes or citrus odors.
3. Dog and cat doors have been developed that will only open for the pet wearing the activation collar or "key." In fact, some can be programmed to be activated by the pet's microchip. Child safety locks, secure trash bins, barricades, and crates or dog pens can be used to prevent and avoid problems.
4. Bark deterrents: for a bark-activated device to be effective, it must immediately interrupt the barking, be sensitive enough to detect each undesirable vocalization, and specific enough that it is not activated by extraneous stimuli. Bark-activated, audible, and ultrasonic devices can be placed in areas where the pet might bark (window, front hall, cage). Bark-activated collars that deliver a spray of air or citronella can be worn by the dog at times it might bark. There are also ultrasonic and audible deterrent bark collars but these seldom appear to be effective. Bark-activated products should only be applied if they effectively stop the barking and the owner is present to reward the quiet behaviors that precede and follow barking. Vocalization that is due to anxiety (e.g., storm phobia, separation anxiety) should not be suppressed by a bark collar since, even if effective at reducing barking, it will likely increase, not decrease, the pet's anxiety.

fear and pain, they can condition new fear responses and further intensify underlying fear and anxiety, leading to emotional issues for the pet and the development of new behavior problems (e.g., defensive or redirected aggression or intense avoidance responses). At the other extreme, despite the level of discomfort, many pets will not be deterred and will continue to bark with a shock collar or run off the property with electronic fencing. Other concerns specific to electronic fencing are that it does not keep people or other animals off the dog's property and that if the dog escapes the property it will get shocked if it tries to return. Therefore, since the use of any product that causes pain, discomfort, or fear compromises the pet's welfare, their use cannot be condoned except to consider whether there is any justification for their use if they might spare a pet from relinquishment.

Where the products are legal, practitioners should advise clients of the potential harm these products might cause to the pet and its welfare, and provide alternative options that might effectively address the clients' concerns. Under no circumstances, however, is there any need to resort to these products for dog training.

Modify the pet's behavior with psychoactive drugs, pheromones, and alternative remedies

Although medications can be used for a wide variety of behavioral applications, very few have been labeled for the applications in which they are being used (see [Chapter 8](#)). Synthetic pheromones and other complementary therapeutics have been less rigorously tested but data are emerging on the possible efficacy of some of these products in the treatment of urine marking and scratching in cats, and as adjunctive treatment for anxiety disorders in dogs and cats (see [Chapter 9](#)).

Remove the pet from the household

Removing the pet from the home may be an unfortunate but important consideration, especially in situations where there is the potential for injury to people or other pets and when the owners have unreasonable expectations about what they wish to achieve. Although removal of the pet may seem like a failure, it is desirable if it prevents injury or removes the pet from a situation in which it is subjected to undue distress. However, while rehoming may be a consideration, it may not prove to be a practical option unless safety can be ensured and a willing and suitable home can be located. Thus many pets continue to be euthanized as a result of behavioral causes.

Behavioral modification techniques and terms

While environmental modification, drugs, pheromones, supplements, diet, behavior products, and surgery may all be useful in the treatment of behavior problems, the pet's behavior will also need to be modified through proper application of learning principles and training techniques. The behavior modification techniques discussed below are utilized throughout the text to treat a variety of behavior problems.

Aversion therapy

Aversion therapy is a classical conditioning procedure for eliminating undesirable behavior by pairing the unwanted behavior with a sufficiently unpleasant stimulus. For example, by pairing an aversive stimulus such as bitter taste, a foul odor, or irritating noise with the behavior (e.g., rock eating, destructive chewing, scratching), the behavior may be eliminated. In humans, associating an unpleasant outcome (e.g., noise, taste, odor, nauseant, or even pain) with smoking, gambling, drinking, drug use, or even nail biting may successfully stop the undesirable habit. To be successful, the degree of noxiousness or discomfort must outweigh the motivation to perform the behavior. However, because these treatments may be morally objectionable, the individual can choose whether or not to participate. Pet owners should therefore consider the ethical issues, including the degree of discomfort, before considering aversion therapy.

Avoidance and escape

In *avoidance conditioning* the animal learns to avoid the aversive stimulus, while in *escape conditioning* the correct response terminates an aversive stimulus. To be effective, the stimulus must be of sufficient intensity to produce the desired response. Timing is the critical element. If the aversive stimulus is applied as soon as the behavior begins, the pet can learn that escape terminates the stimulus. On the other hand, if the aversive stimulus is immediately preceded by a brief neutral (warning) stimulus (e.g., a buzzer, tone), the animal may learn to avoid the neutral stimulus (signaled avoidance). Avoidance learning depends on both classical conditioning of fear (warning stimulus plus aversive stimulus) and negative reinforcement since escape terminates the event.

Motion detector alarms and noxious tastes and odors can be used to teach animals to avoid particular objects or areas. A dog that jumps off a couch to avoid a spray device is escaping from the aversive stimulus itself. However, if an unpleasant event (taste, alarm, spray) is paired with a warning stimulus (tag odor such as vinegar, visual cue such as a warning flag, or audible cue such as a neutral tone), the pet can learn to avoid objects that are paired with the warning stimulus without having to experience the unpleasant event repeatedly. It is interesting to note that, although early in avoidance training the warning sound or odor will provoke fear, when the pet learns how to avoid the outcome, anxiety generally diminishes (since the situation becomes predictable and under the pet's control).

Avoidance conditioning is most likely to be successful when the desired response to the fear-evoking stimulus is compatible with the animal's expected defensive or survival reaction (fight, flight, or freeze). The response of a dog or cat is likely to differ from the reaction of a pigeon or a hedgehog. These instinctive responses, which are often referred to as species-specific defensive reactions, are related to the species, the stimulus, and the environment. Behaviors that are compatible with the animal's innate defensive reactions are learned most quickly. In practice, most applications for avoidance involve training the pet to avoid or retreat from an object (couch, garbage can) or an area of the home (windowsill, dining room). However, attacking the fear-eliciting

stimulus might be displayed, especially if the strategy can successfully remove the stimulus, which is why human intervention in punishment should be avoided.

Classical conditioning

This type of learning begins with an unconditioned stimulus that elicits a reflex behavior called an unconditioned response. A neutral stimulus that has no influence on the reflex is repeatedly paired (just prior to the unconditioned stimulus) until it becomes a conditioned stimulus that is able to elicit the response by itself. The response to a conditioned stimulus is referred to as a conditioned response.

This type of conditioning is also known as pavlovian conditioning, after the scientist who conditioned dogs to salivate when they heard a bell. Salivation is a reflex response (unconditioned response) to the stimulus of food (unconditioned stimulus). Pavlov conditioned the response by repeatedly ringing the bell (neutral stimulus) just as the dogs were about to be fed. In time, they began to salivate whenever they heard the bell, even when no food was present. At that point, the sound of the bell became a conditioned stimulus which triggered salivation (conditioned response). The experiment is duplicated daily in many households whenever a pet hears the sound of a can opener or the food cupboard being opened. Similarly, the dog may become either excited or anxious each time the doorbell rings (depending on what association has been made) or may become anxious when taken in the car, or on arriving in the parking lot of a veterinary clinic (if there have been previous unpleasant experiences). Dogs with separation anxiety will soon identify cues that are predictive of being separated from the owner (e.g., getting car keys, picking up a purse), and these become conditioned stimuli for anxiety. Dogs fearful of thunder may begin to appear anxious with the onset of darkening sky, rain, lightning, or perhaps even a drop in barometric pressure. An *inhibitory conditioned stimulus* is a stimulus that is predictive of the absence of the unconditioned stimulus. Using a clinical example, if a neutral stimulus such as music, tag odor, or piece of owner clothing is associated with reward training and relaxation exercises, then this formerly neutral stimulus becomes both pleasant and predictive of the owner being at home (an absence of owner departures). Therefore, counterconditioning to anxiety-evoking stimuli as well as developing a set of inhibitory stimuli can be valuable retraining tools in separation anxiety.

Classical conditioning can be used to enhance training by creating conditioned stimuli for rewards and conditioned punishments.

Conditioned punisher

By repeatedly pairing a neutral cue (e.g., a verbal “no” or “stop,” duck call, buzzer) with punishment (whether positive punishment such as a citronella spray or negative punishment such as the removal of food or affection), the neutral cue becomes predictive of punishment. This can be of practical and humane importance, since the pet may learn to retreat or cease a behavior with the cue alone, reducing the need for the actual punishment. Unlike a conditioned reinforcer, where constant pairing of the neutral stimulus and treat are advisable to maintain the predictive relationship of

the neutral stimulus (see below), the primary punishment need not be applied if the neutral stimulus (conditioned punisher) achieves its goal. A novel odor or taste can also be used as a conditioned punisher, by pairing it with an aversive event such as placing a tag odor or taste in an area where an aversive device has been set up (e.g., motion detector spray or alarm or a stack of empty cups set to topple over). Once the odor has been repeated, paired with the primary punishment, the odor alone may be sufficient to teach the pet to stay away from an area.

Conditioned reinforcer (bridging stimulus)

By repeatedly pairing a neutral cue such as a clicker prior to the presentation of a favored food treat, the neutral stimulus becomes predictive of the treat (conditioned stimulus). The conditioned stimulus can then be used as a secondary or conditioned reinforcer to signal the pet that a treat is coming. Since the conditioned reinforcer bridges the time and serves to reinforce the response until the primary reinforcement can be given, it can be referred to as a bridging stimulus. The conditioned stimulus could also be a whistle or even a word such as “yes”; however, when words are used, since they have the potential to take on the owner’s emotion and may be heard by the dog in other contexts, the association may be weaker than with a whistle or clicker.

With clicker training, timing of the reward can be precise (contiguous) since a click can be used to mark immediately the behavior that will be reinforced, as long as the owner is closely monitoring for the desirable behavior within an audible distance. The primary reinforcer (the treat) can then be delivered, even after a short delay. In fact, with repetition of the click-and-treat pairing, the delay between the click and the primary reinforcer can be gradually increased. If the owner focuses on clicking only one specific behavior at a time (contingency) until the end result has been acquired (captured), new tasks and gradually longer and more relaxed behaviors can be quickly and effectively learned (see www.clickertraining.com).

Controlled exposure

When flooding (see below) is utilized in behavioral therapy, exposure to the full stimulus may be too traumatic for habituation to occur, in which case the fear might be further sensitized. A more practical technique is to reduce the stimulus so that fear is minimized to a point where the pet can successfully habituate (settle) during exposure at which point the dog can be positively reinforced or negatively reinforced by taking the dog away or to the stimulus away. The pet can then be exposed to progressively more intense stimuli at subsequent training sessions. Controlled exposure differs from desensitization and counterconditioning in that the pet is exposed to low or controlled levels of the fear-evoking stimuli rather than levels below the threshold that would evoke fear.

Countercommanding

This term might be used to describe the situation where a pet is taught to respond to a particular command that is incompatible with the undesirable behavior. For example,

sitting for a food reward during greetings is a behavior that would be incompatible with jumping up on people. However, while cue or command training might be an effective way to achieve the desirable outcome, the focus should be on replacing the undesirable behavior with one that is desirable. Therefore other forms of reinforcement training (lure/reward, head halter, clicker training) might also be used or incorporated to achieve this goal (see [differential reinforcement](#), and [response substitution](#)).

Counterconditioning (classical counterconditioning)

This technique involves conditioning an animal to alter its emotional response to a stimulus (i.e., a response that is independent of voluntary control). When a behavior problem has an underlying emotional component, the goal is to pair the stimulus or event with the opposing emotional response (i.e., positive, calm to replace fear). Counterconditioning is often used to modify the behavior of fearful pets. The goal is to take the conditioned stimulus that incites the response (e.g., passing unfamiliar people on the street) and pair it with an unconditioned stimulus (favored food treat) that evokes a desirable (positive) response. Similarly, aversive counterconditioning can be used when the pet is attracted to an item or location that is potentially dangerous or considered “out of bounds.” In this form of counterconditioning, a noxious (aversive) stimulus is paired with the behavior that is undesirable to bring about a negative association. However, when the stimulus is food, it is unlikely that repeated pairing of any aversive stimulus other than a nauseant (see [taste aversion](#), below) can deter the behavior.

Differential reinforcement

With differential reinforcement, the goal is to eliminate undesirable behavior by reinforcing a competing alternative behavior while ignoring (not reinforcing) the undesirable behavior. In practice the dog or cat would be rewarded for exhibiting any behavior other than the undesirable behavior. For example, the cat that is aggressive during petting would be reinforced for any behavior that is incompatible with growling or biting. During petting, the owners should first determine the length of time that the cat will tolerate petting before it might bite, so that the reinforcement can be administered successfully. Over time the length of petting should be gradually increased, while reinforcing the cat for any behavior other than biting.

Discriminative stimulus (command cue)

A discriminative stimulus is a learned stimulus that triggers an operant behavior. For example, before you walk your dog you pick up the leash, walk to the front door, put the leash on the dog, and go for a walk. In time, the dog learns that picking up the leash predicts it will be walked and begins going to the door on its own when it sees the leash. In this case, the leash is the discriminative stimulus and going to the front door is the operant behavior. A discriminative stimulus could also predict something the animal wants to avoid. If you frequently pick up the leash and hit the dog when it has done something unacceptable, then the dog may

learn that picking up the leash (discriminative stimulus) predicts a beating, and the pet may run under the bed (operant behavior) whenever it sees the leash. In training the discriminative stimulus controls and maintains a behavior or response that has been followed by a reinforcer. Both verbal discriminative stimuli (command) and visual discriminative stimuli can be used to cue a behavior. Dogs actually appear to focus better on visual cues than audible cues. In one study where two new behaviors were taught using both a verbal cue and visual cue, once the behaviors were learned the verbal cue for one behavior was given at the same time as the opposing visual cue for the other behavior. In all cases the dogs responded to the visual cue over the contradictory verbal cue. Therefore in training, care should be taken to ensure that visual signals do not overshadow verbal cues; alternately visual cues (hand signals) might be used to achieve a stronger response.¹⁰

Disruption and diversion

A device that is sufficiently startling or novel to interrupt either response might be considered a disruptive device (see [external inhibition](#), below). Dog whistles, noise devices, squeakers, ultrasonic trainers, a shake can, compressed air, and citronella spray products might be effective for disrupting the undesirable response so that the appropriate response can be trained. However, if the device is sufficiently aversive to reduce the probability that the behavior will be repeated, then it is actually serving as a punishment device.

Drug desensitization

Drugs may be effective for reducing the pet's anxiety, fear, or aggressiveness when the stimulus cannot be sufficiently controlled or muted, so that a desensitization program can be implemented (see [Chapter 8](#) for details). On medication, the pet becomes less sensitive and reactive to the stimulus and the emotional response is lessened. As the desired response and emotional state are achieved, the drug is gradually reduced.

External inhibition

When a novel stimulus event occurs during or slightly before the conditioned response, this will result in a temporary weakening of the conditioned response. For example, if the goal is to change the anxiety-evoking response of a doorbell to one that is calm or positive, a high-pitched whistle or shake can may be sounded as soon as the bell rings, but before the barking begins. The barking response will be inhibited or weakened as the pet orients to the noise.

External inhibition or a disruptive stimulus can be used to interrupt a response to a stimulus so that an acceptable response can be achieved and reinforced. For example, a disruptive device such as a bark-activated citronella spray collar might immediately disrupt the barking that occurs as a stranger arrives on the property. If the dog is then taught to come to a family member and sit for a treat, this new response, along with a positive association with visitors, might be achieved. Similarly, a dog that exhibits coprophagia immediately following each bowel movement might be immediately disrupted with a noise device or citronella

spray, which would provide a window of opportunity in which the dog could be taught an alternative acceptable response such as coming to the owner's side and sitting for a food reward (i.e., differential reinforcement, response substitution).

Extinction

The withholding of rewards leads to the elimination of a behavior. For example, an owner may inadvertently reward a nuisance behavior (e.g., whining or begging at the table) by giving the pet a piece of food. If the reward for the soliciting behavior is no longer given, the behavior will eventually cease. The use of extinction may not be sufficient on its own to correct many behavior problems, but it is an important part of the approach. Behaviors that have been rewarded intermittently are much more resistant to extinction. Once extinct, it takes only an occasional reward for the behavior to resurface. In some cases, spontaneous recovery can occur after a rest period between extinction trials. Therefore for more permanent resolution, differential reinforcement should be used to replace the response being extinguished with an incompatible response.

Extinction burst

When reinforcement is first removed, the animal's behavior may initially intensify as the pet tries even harder to achieve the reward. Owners must be aware that this increase in behavior, known as an extinction burst, must also be ignored, or the new and more intense behavior will be reinforced.

Flooding (response prevention)

Flooding involves the continuous exposure of the subject to a stimulus at a level that evokes a response, until the response to the stimulus ceases. Pets that have learned an avoidance response to a fear-evoking stimulus can be retrained to overcome conditioned fears by exposing them to the stimulus so that they cannot escape. To be effective, the animal must be continuously exposed to the stimulus until the fear subsides and the stimulus itself must no longer be associated with fear. If the pet is unable to perform the avoidance response, and the previously fear-eliciting stimulus is no longer threatening, the fear response will undergo extinction. If the stimulus is removed before signs of fear abate or if the owner provides patting or attention (in the belief that it might help calm the pet), fear-related behavior may be reinforced rather than diminished. Similarly, if the pet retreats before the fear abates, the threat will have been removed by the escape behavior (negative reinforcement). In practice, flooding can potentiate problems since exposure of a pet to a strong fear-eliciting stimulus may severely traumatize it. However, controlled flooding (controlled exposure) techniques, where the pet is exposed to mild fears until it habituates and then progressively more intense stimuli at subsequent sessions, may be more useful and practical.

Habituation

Habituation is the process by which animals learn to adapt to novel sounds and experiences, provided they suffer no

consequences from such exposure. During habituation, the subject is repeatedly exposed to the stimulus without the presence of negative or positive reinforcers until the response ceases. The animal that is initially anxious during car rides may settle down after it takes several car rides and realizes nothing aversive is going to happen. During the primary socialization process, it is important to expose young dogs and cats to as many different environments and experiences as possible (e.g., cars, veterinary clinics, stairs), so that they do not become fearful of these situations.

On a practical note, when using disruptive and punishment devices, they must be sufficiently startling or aversive, as well as contiguous with and contingent on the behavior. Improper or excessive use may lead to habituation of the punishment or disruptive device.

Latent learning

This type of learning occurs without the presence of purposeful reinforcement and is usually not readily obvious. Latent learning will facilitate the relatively rapid acquirement of accurate performance of a behavior at a later time when reinforcement is introduced. Rats that are allowed to investigate a maze, but receive no reinforcement, are quicker to learn to run the maze for a food reward than are rats that have had no previous experience with the maze. A dog that is being taught to find an object on command may learn more quickly in an environment that it has previously had the opportunity to explore than in an unfamiliar environment.

Learning

Dogs and cats learn through the immediate consequences of their acts. They are motivated to repeat and increase those behaviors that have positive outcomes (receive something desirable or remove something undesirable) and minimize or avoid those behaviors that have aversive or unpleasant outcomes (receive something undesirable or remove something desirable).

Motivation

Motivation is an animal's drive or desire to perform a behavior. The pet's level of motivation is a key consideration in training and in trying to reduce behaviors through behavioral modification. Motivation is dependent on the attractiveness of the reward. Deprivation of an important resource may increase the motivation to attain that resource. Deprivation of a needed resource leads to arousal so that the pet is then motivated to perform behaviors to achieve de-arousal or homeostasis.

When selecting rewards for training and counterconditioning, the strongest possible motivator (see [reinforcer assessment](#)) should be used to overcome the pet's desire to perform an alternative behavior, and to ensure that the pet performs the desired behavior. Another practical aspect of behavioral therapy is that the pet's motivation to perform an undesirable behavior can be reduced to a level where the pet is less likely to perform the undesirable response. Desensitization, habituation, and controlled exposure techniques involve the manipulation of exposure to stimuli so that the pet's



Figure 7.1 Food left on worktops is a powerful motivator for cats to climb onto those surfaces.

motivation to perform the undesirable behavior (e.g., barking, biting) or emotional response (e.g., fear) is reduced. Then, through the use of differential reinforcement, the pet can be motivated to perform an alternative competing behavior or through counterconditioning can develop an alternative acceptable emotional state.

When the pet is highly motivated to perform an undesirable behavior (Figure 7.1), stringent control mechanisms and a deterrent of high intensity will likely be required. However, for behaviors that have low levels of motivation or when the motivation can be reduced by modifying the stimulus or reducing the pet's desire for the stimulus, less intense deterrents and a lower level of control might suffice.

Observational learning

Observational learning refers to learning that occurs passively by watching others.¹¹ Studies have been carried out in many species, including great apes, dolphins, rodents, birds, and puppies. However, there is some question as to whether dogs can learn by observation, although there are now a few studies of observational learning by kittens and puppies from the mother.^{12,13} In one study, puppies that observed their mother learn to sit with food rewards were significantly better at learning the task than puppies who had not observed their mother during the initial learning phase.¹⁴ In another study dogs that observed a group of dogs undergo clicker training were then able to learn a new task using a secondary reinforcer 3 seconds before a primary reinforcer, while dogs that had not observed the clicker training could not learn the task.¹⁵ In each of these examples the critical issue appears to be the observation of the learning itself rather than the end result (the behavior). However, in most cases what might appear to be observational learning is a form of social or group-facilitated behavior such as with cooperative hunting, group-facilitated barking, and socially facilitated eating. In addition, dogs and cats are likely to attend to the same cues as other pets in the household but responses may be the same (or different) based on individual motivation and previous experience (e.g., going in the car, greetings, garbage raiding, going on walks). *Allelomimetic behavior*, especially in the young dog, may also be confused with

observational learning. In allelomimetic behavior, the animal learns because of its social inclination to follow the lead or join in the activities of its conspecifics and other members of the social group (hence the importance of early socialization).

One-event (trial) learning

Learning takes place in a single pairing of a stimulus and response. This can be especially true for very aversive events. If the pet is shocked when it bites into an electrical cord, it is very unlikely that it will chew on a cord again. Changing the response to the stimulus can be very difficult with one-trial learning, especially when the stimulus was extremely aversive.

Also, according to this theory (promoted by American psychologist Edwin Guthrie), the associations are not strengthened over time by repeated exposure to a stimulus. This is controversial as many psychologists believe that associations are strengthened with repetition.

One-event learning can be an effective way to teach the pet to avoid particularly dangerous or undesirable activities from the outset by pairing a neutral stimulus with a strongly aversive stimulus. For example, the use of a highly noxious taste may deter chewing of electrical cords. However, the aversive stimulus should not be strong enough to cause emotional damage.

Operant conditioning (instrumental conditioning)

This is the type of learning that occurs when the results of a behavior influence the probability of that behavior recurring. In operant conditioning the animal learns to associate a behavior with outcome since it learns from the consequences of its actions. For example, by receiving a toy or food immediately and consistently following a behavior, the behavior is increasingly likely to be repeated. Once the behavior has been reliably reinforced, a cue (or discriminative stimulus) is added prior to the sequence, in which case the behavior is under stimulus control if the stimulus (cue) can reliably initiate the behavior–reward sequence. Thus training with cues or commands and rewards is an example of operant conditioning. Although training is an active way to teach pets what behaviors will receive rewards (and what behaviors will have unpleasant consequences, i.e., punishment), a great deal of operant learning occurs independently of owner interactions. Pets that knock over a trash barrel and obtain food are rewarded for the act. However, if the owner wants a cat to stay off a counter, an immediate verbal reprimand or a spray of water might reduce the probability of the pet repeating the behavior in front of the owner in the future. However, if the consequence of jumping on the counter was a spray of air from a motion-activated device, the behavior might be reduced whether the owner is present or not.

Overlearning

This involves the continued reinforcement of a behavior that has already been learned. The consequence of overlearning is an increased resistance to extinction and longer retention of learning once all reinforcement stops. Also, responses are

Table 7.4 Punishment failures

Type of failure	Reason for failure
The pet does not associate the punishment with the act	Punishment is applied too late or inconsistently
The pet learns to avoid an area instead of learning to avoid the performance of a behavior	A motion-activated alarm prevents chewing in one room of the home, but not others
The behavior problem continues but targets may change (e.g., chews different items, raids other garbage cans; the pet is kneed for jumping on the front of people, then begins to jump from behind)	When the pet is highly motivated to perform a behavior or the outcome of the behavior is desirable (extrinsic or intrinsically reinforced), the pet will continue to perform the behavior or similar ones until it is taught an acceptable substitute behavior
Punishment reduces a desirable response	The pet that is punished by the owner as it eliminates indoors becomes fearful of eliminating in front of the owner in any location, including outdoors
Punishment is ineffective at reducing fear or excessive submission	- Punishment leads to an increase in submissive behavior, such as submissive urination - Punishment may cause fear and avoidance of the owner or defensive aggression toward the owner - Punishment may worsen the fear response to a fear-eliciting stimulus
The behavior continues in the family's absence	The animal learns that punishment only occurs when the family is present
Punishment leads to an increase in behavior	- Punishment that does not immediately stop or suppress the behavior may be insufficiently aversive and may even serve to reinforce the response - Physical punishment should be avoided as it can lead to fear, defensive aggression, hand-shyness, avoidance, and fear and conflict in the relationship with the owners

more dependable and consistent in the presence of stressful or distracting stimuli.

Prevention – setting the pet up to succeed

Preventive techniques are some of the most valuable tools in behavior therapy for pets with behavior problems. By preventing access to problem areas or targets for misbehavior, the desirable effects of these acts (whether intrinsic or extrinsic) can be avoided so that the problem is not further reinforced. For example, once the pet eliminates in an inappropriate area, or chews on the owner's possessions, the problem is much more likely to recur. Denying the pet the opportunity to perform unacceptable behaviors may help shift the pet's behavior to something more acceptable provided acceptable alternatives are provided. Prevention may also be the most practical way to prevent injury and avoid damage to the owner's possessions.

Problems might be prevented in a number of ways. By keeping the pet occupied with appropriate and acceptable activities (chew toys, play toys), inappropriate forms of chewing and play can be prevented. Confinement to a safe area such as a crate or pen can also be effective, if appropriate confinement training methods are utilized (see [Box 4.11](#) and client handout #5, printable version available online). Closing doors or placing child gates might be effective and avoidance devices or deterrents can be used to keep pets away from potentially problematic areas (see [environmental punishment](#), below). Keeping a leash on the pet for supervision can also help prevent problems.

Punishment

Application of a stimulus that decreases the chance of the behavior being repeated is referred to as *positive punishment*.

For punishment to be effective a sufficiently unpleasant stimulus will need to be received during or immediately (within 1–2 seconds) following a behavior if it is to decrease the likelihood that the behavior will be repeated. To be effective and humane, the stimulus must be intense enough to reduce the pet's desire to repeat the behavior without causing physical harm or undue fear or discomfort. Timing and consistency are critical ([Table 7.4](#)). If punishment is not immediately successful at stopping the behavior, it should not be used at all.

Removal of a stimulus or event that is positive can also be used to lower the probability that a behavior will be repeated, and this is known as *negative punishment*. For example, if the owner plays with the dog and immediately withdraws attention each time the dog begins to mount or jump up and bite, and then playing resumes as soon as these behaviors cease, the mounting or jumping up and biting should diminish.

Punishment can be a useful tool in behavioral modification to reduce undesirable behaviors but inappropriate use can exacerbate the situation and cause other behavior problems. It is important that the form of punishment be tailored to each pet and problem. If the punishment is too weak, it can lead to habituation and failure in modifying the problem behavior. In fact, it may even serve to reinforce the problem by providing a form of attention. If it is too harsh, punishment can inflict unnecessary pain and discomfort and cause behavior problems, including excessive fear and avoidance. In addition, physical punishment (slapping, thumping, rolling the pet on its back) should always be avoided since it inflicts unnecessary pain and discomfort and can cause fear, hand-shyness, and avoidance and can lead to defensive aggression as well as conflict and uncertainty in the pet's relationship with the owners. In fact training with punishment, including hitting, prong collars,

hanging by choke collars, shock, physical methods such as alpha rolls and even yelling “no,” is associated with increased aggression and avoidance.^{16–18} Dogs, on the other hand, trained solely with reward-based training had fewer behavior problems than dogs that had punishment as part of their training.¹⁹ In a recent survey of over 3800 pet owners, 93% of owners reported success in training with reward-based techniques, 87% with negative reinforcement, and 69% with punishment.²⁰

By initially pairing a minimally aversive stimulus (e.g., “no” or “stop”) with a more aversive stimulus (e.g., shake can or air horn), it may be possible to use a command alone for future punishment (conditioned punisher). Commonly used forms of punishment that avoid physical contact include direct owner-initiated techniques (e.g., novel noise, scolding), remote owner-initiated techniques (e.g., sprays of water, remote-activated citronella collar), and environmental punishment, such as disagreeable tasting or smelling products, or motion-activated alarms (discussed below).

Punisher assessment

Punisher assessment involves predicting which form of punishment will be most practical, appropriate, and successful for an individual pet, which are likely to be unsuccessful, and which might lead to further problems (Table 7.4). The ultimate success or failure of punishment techniques depends on the individual pet’s sensitivity to the punishment, the motivation to perform the particular behavior, as well as the behavior for which it is being punished. One might anticipate that the more aversive the stimulus, the more effective the punishment, but this is not necessarily true. For example, many dogs continue to hunt porcupines and skunks even after they have experienced the ill effects of such a meeting.

Punishment techniques

Direct interactive punishment

Direct interactive punishment might be considered when the pet performs an undesirable act in the presence of the owner. An immediate, startling reprimand, harsh hiss, or loud noise is often effective and all that is necessary for young or sensitive pets. Punishment should not be used if it causes excessive fear, submission, or aggression. A timely correction can often be achieved by leaving a long leash attached to the pet. This allows the owner to interrupt or deter the undesirable behavior with a gentle pull, as well as direct the pet into a more acceptable behavior. A head halter provides additional control since it does not choke and immediately controls the head and muzzle when the leash is pulled. When the owner is not present to supervise, problematic behaviors must be prevented by controlling the pet’s environment, including the possible use of avoidance devices or booby traps.

The use of a deterrent device rather than the human voice may be a more practical and effective means of punishment since it may be more startling and effective than verbal reprimands, is less likely to lead to habituation, and less likely to cause fear of the owner. However, since cats are more likely to respond negatively to any form of interactive punishment, it should be used cautiously or avoided entirely. Cats can become fearful of the person associated with the

punishment, leading to avoidance, increasing uncertainty, and even aggression.

Many of the devices make noises that the pet finds unsettling. Most are audible to people, but some are ultrasonic. Other devices include a can containing nickels (shake can), pocket rape alarms, air horns, a water rifle, or a can of compressed air. An aversive device is most practical when it is used during the undesirable behavior, and removed when the undesired behavior is stopped. Note that the same devices might also be used for negative reinforcement, which differs from punishment in that the deterrent ceases when the desired behavior is achieved (which would be a preferable means of training). Using a verbal command (such as “no!” or “quit!”) at the same time as the primary punishment often results in the command alone being sufficient punishment in the future (conditioned punishment).

Remote interactive punishment

Remote interactive punishment involves the application of an aversive stimulus to the pet by a person the pet cannot see. Hiding out of sight, or following the situation with a monitor, web cam, or pet monitor (an electronic device that emits a signal when disturbed) can ensure that the pet is immediately caught as the inappropriate behavior begins. If punishment can then be meted out while the owner remains out of sight, the pet should associate the punishment with its behavior rather than with the owner.

Owners can rig up noisemakers, buckets of water, hoses, and sprinklers that they can control and activate from out of sight as the undesirable behavior begins. There are also a number of deterrents that can be activated by remote control to provide aversive stimuli. For example, remote-control switches can be plugged into an electrical outlet and connected to a variety of devices, including vacuum cleaners, water picks, alarms, and hair dryers. As soon as the behavior stops, so should the punishment. Remote-control citronella spray collars work on the same principle. If a command such as “stop” precedes each spray, it may soon become possible to stop a behavior such as garbage raiding and climbing onto furniture with a command (Figure 7.2).

The primary advantage of remote punishment is that the person is not directly associated with the act of punishment. This means that the pet may learn to cease the behavior even when the owner is not present and there is little or no risk of the pet becoming fearful of the owners as long as they remain out of sight during punishment. This is especially important for cats.

Time out

The goal of time out is for the pet to learn that misbehavior leads to temporary isolation and removal of rewards. When the pet first starts to misbehave (e.g., barking), it is given a command (e.g., “quiet”) and given the opportunity to respond appropriately. If it does, it should be rewarded and praised immediately. If it continues barking, the pet is relocated to a confinement area for a short period. It is only released when it is quiet. To be effective, the isolation room should not be the feeding, sleeping, or play area of the pet. A laundry room, basement, or bathroom is a good choice. Since a pet does not necessarily make the association that the confinement is a consequence for the behavior, this



Figure 7.2 Remote deterrent: Spray Commander™ remote citronella spray collar (Used with permission of Premier Pet Products).

technique may not be successful at reducing the behavior but does serve to separate the pet from the site and stimuli until it settles down.

Environmental punishment

In environmental punishment, the environment is rigged so that an unpleasant consequence occurs when the pet misbehaves. Booby traps, home security, and child safety alarms can be set to go off when they are triggered by the pet. This can be as simple as stacking a set of empty tin cans or cups where a cat might scratch, balloons rigged to pop on contact, or placing a less appealing surface such as plastic or aluminum foil, an uncomfortable substrate, double-sided tape, or a plastic carpet mat (nubs up) to keep a cat away from specific areas (Figure 7.3). New technology has provided us with motion-activated alarms and sprays that are triggered when the pet misbehaves or enters an area where the misbehavior occurs (Figure 7.4). Motion detectors designed for home security use may also be effective. Cats that chew might be discouraged by commercial pet repellents, bitter-tasting sprays, or coating the surface with hot sauces, cayenne pepper, Tabasco, menthol, or oil of eucalyptus.

See Box 7.1 on behavior products and the list of behavior product manufacturers in Appendix B (and available online) for further details.

For outdoor use, motion-activated alarms, motion-activated water sprinklers, or pet repellents might also help to keep the owner's pet out of selected areas on the property or stray animals off the property.

There are several different bark-activated devices that are designed to control and inhibit barking. For any bark-activated device to be effective, it must be sensitive enough to detect each undesirable vocalization, specific enough that it is not activated by extraneous stimuli, and must immediately interrupt the barking. There are audible and ultrasonic bark-activated alarms that are designed to be placed on a windowsill or table in an area where a dog might bark (e.g.,



Figure 7.3 An upside-down carpet runner nubs up (see insert) can be used to make it uncomfortable for the pet to use an area.



Figure 7.4 A motion activated spray device (ssscat) can be used to keep the pet away from selected areas.

front hall, doorway, cage). There are also ultrasonic and audible bark-activated collars but these are seldom sensitive, specific, or noxious enough to be effective. Bark-activated spray collars (scentless, citronella) appear to be most effective^{21,22}. However, these should be used when the owner is present to ensure that they effectively achieve the desired goal and so that the owners can reward quiet behavior and countercondition to stimuli. Owners that rely solely on the collar to inhibit barking without concurrent reward training may find that the dog may habituate to the spray over a few weeks.²³ If the barking is not immediately interrupted or deterred by the spray, use of the bark device should be discontinued as it is either not sufficiently intense or the dog is too highly motivated to be interrupted by the spray. In



Figure 7.5 Manners Minder remote-activated treat dispenser. (Courtesy of Premier Pet Products; see drsophiayin.com for description and video.)

addition, a bark-inhibiting device should not be used when the pet's barking is due to fear or anxiety as it is unlikely to be effective, does not address the underlying cause, and may even increase fear and anxiety.

Reinforcement

Positive reinforcement

Positive reinforcement involves the application of a stimulus immediately following a response that increases the likelihood of the response being repeated. Anything that the dog or cat innately finds desirable can be a primary reinforcer. Whether a particular reinforcer will be effective depends on the motivational state of the dog in relation to the reward. The motivational value of any reward is likely to be increased by deprivation (e.g., delaying dinner until after training with food) and by use of special treats or toys for which the pet has shown a strong desire. Petting and attention, playing with family members or other pets, a favored toy, going for a walk, a car ride, or a chew toy can all be used for reinforcement but will have varying appeal depending on the pet's temperament, previous experience, and degree of deprivation. For example, the pet's sociability, fearfulness, familiarity, and attachment to a person will determine whether affection and attention from that person will be rewarding.

A stimulus that is not initially a primary reinforcer can become a reinforcer if it is repeatedly paired with a stimulus that is already reinforcing. For example, praise ("good dog") can become a conditioned reinforcer if it is used just prior to giving the primary reinforcer such as food or social attention.

For rewards to be effective as reinforcers they must be contingent on the behavior (i.e., the reward is predictive of the behavior) as well as contiguous (i.e., closely follows the

behavior). If the reinforcement is also provided noncontingently, the behavior will be unlikely (or much slower) to be learned. For example, if a dog or cat gets affection with no regard for the preceding behavior, the pet may be unable to learn what behavior will get the reward (attention). If the pet uses other strategies, such as barking, biting, or jumping up, which successfully get the attention the pet desires, these behaviors will have been reinforced. Owners who then try to ignore these behaviors, most, but not all of the time, are giving variable and intermittent rewards, which makes the undesirable behavior far more resistant to extinction (see timing and schedule of reinforcement, below). If instead the owner makes the attention contingent on a behavior such as sitting or lying down, and the reward immediately follows (i.e., contiguous), a desirable behavior can be learned. Also of concern is that when rewards such as attention, treats, or food are given inconsistently and are not contingent on any particular behavior, the pet will be increasingly conflicted and frustrated as to what behaviors get rewards. Pets need some level of control over their environment, including what behaviors consistently get rewards; the pet may become increasingly anxious, and the resulting conflict could lead to displacement behaviors such as mounting, circling, and tail chasing, especially in dogs that are genetically predisposed. Therefore, in order to use desirable resources and activities as reinforcers most effectively they should be given predictably either when desirable behaviors are observed or by using rewards for behaviors that follow cues or commands. Family members must also be cautioned that mild punishment ("stop," "get down," light physical contact) is unlikely to dissuade the pet, and may actually be rewarding the problem by unintentionally encouraging further play. However, if the physical reprimand is then increased in intensity, the pet could either learn to enjoy rougher and rougher handling or may desist but become fearful and hand-shy of the person.

Rather than use punishment techniques to decrease the performance of those behaviors that the owner considers undesirable, it is much more practical and humane to provide appropriate outlets for chewing, play, feeding, elimination, and reward any behavior that owners want the pet to repeat (learn). In this way, little if any punishment or discipline should ever be required. Each time the pet's actions are successful at achieving its goal, the behavior has again been reinforced. For more information, refer to [Box 4.12](#) (client handout #22, printable version available online).

Negative reinforcement

Negative reinforcement is when the removal of a stimulus (usually unpleasant) increases the probability of the behavior being repeated (reinforcement). Negative reinforcement differs from positive reinforcement in that the stimulus is taken away (negative reinforcement) rather than given (positive reinforcement) when the behavior happens. The use of a leash and head halter is an example of how the pet can be guided into a sit, but the pressure is only released when the pet is sitting.

When outside during a storm, a dog will learn that by seeking shelter under the porch the unpleasant stimulus will be removed. Similarly, when a pet growls and the stimulus retreats, the growling has been negatively reinforced.

Table 7.5 Punishment and reinforcement

	Reinforcement	Punishment
	Increases probability of behavior recurring	Decreases probability of behavior recurring
Positive	Behavior increased by the application of something positive	Behavior decreased due to application of something unpleasant
Negative	Behavior increased due to removal of something unpleasant	Behavior decreased by removal of something positive

Because punishment and negative reinforcement involve aversive stimuli, they are often confused (Table 7.5). With punishment, the application of the stimulus during or immediately following the behavior leads to a *decreased* likelihood that the pet will repeat a behavior. In negative reinforcement the withdrawal of the stimulus *increases* the chance of a behavior recurring. Thus, punishment involves the aversive stimulus being applied during or immediately following the behavior, while in negative reinforcement the aversive stimulus must be applied until the desired behavior is achieved and then immediately removed.

Timing and schedules of reinforcement

Reinforcement delivered after every response is referred to as *continuous reinforcement* while reinforcement delivered after only some of the responses is referred to as *intermittent reinforcement*.

Reinforcement that is timed to occur immediately after the response (contiguous) promotes the most effective and fastest learning. Therefore when a new response is being developed, immediate and regular (continuous) reinforcement is essential. Once the response is performed consistently, slight delays in reinforcement are acceptable. However, if any other response occurs in the intervening period between the desired response and the reward, it will be the intervening response that is rewarded. For example, if the pet eliminates in an appropriate location outdoors and the owner gives a reward as soon as the pet comes back indoors, coming indoors is reinforced, not eliminating.

Intermittent reinforcement can be scheduled as either *fixed* or *variable*. Either the ratio can be fixed (a response is reinforced after a fixed number of repetitions) or the interval can be fixed (the first response after a fixed interval of time is rewarded). Similarly, the ratio can be variable (a response is rewarded after a variable number of repetitions) or the interval can be variable (the first response after a variable length of time is rewarded).

Performance and responding are higher with variable ratios and intervals compared with fixed ratios and intervals, and the learned behaviors are more resistant to extinction. Unfortunately, many undesirable behaviors (e.g., begging, jumping up, vocalization) are rewarded variably and intermittently so that they are highly resistant to extinction.

During initial training, a behavior will be learned most quickly with continuous reinforcement while intermittent

and variable reinforcement promotes a response that is stronger and more resistant to extinction.

Reinforcer assessment

The more valuable the reward, the more motivated the pet will be to learn. Since an individual pet's response to any specific reinforcer may vary, it is essential that the family determine which rewards (play, toys, food, or affection) are most likely to motivate the pet. The effectiveness of the reinforcer can be enhanced by withholding it at all times other than during training. Reinforcers should initially be used sparingly during training of less accurate responses, so that shaping can be used by giving larger or more valuable reinforcers for more difficult, complex, or exact responses.

Response substitution

This technique involves training the pet to display an acceptable response that can be both motivationally and physically incompatible with the undesirable response. This is accomplished through differential reinforcement of an incompatible response. For example, a pet can be trained to sit at greetings to replace jumping on people. Equally important is that the undesirable response is no longer reinforced.

Note that, while the goal of most behavior modification programs is to replace the undesirable response with one that is desirable with reward training, *response substitution* is a term used to describe these techniques and refers to outcome – the desirable response replaces the undesirable response. However, with reinforcement training, this can also be referred to as differential reinforcement of an alternative behavior (e.g., lying quietly on a dog bed when people leave instead of chasing them out the door) or differential reinforcement of an opposite behavior (such as sitting to greet instead of jumping up). This training focuses on giving high-value rewards only for the desirable behavior. On the other hand, since many behavior problems are associated with fear and anxiety, in these cases the focus should be on reducing anxiety. Changing the emotional response to the stimulus from one that is negative to one that is positive is counterconditioning. However, in practice a behavior modification program will often begin by teaching focused and relaxed behaviors through reinforcement-based training (operant learning). The pet might then be gradually exposed to the stimuli that incite fear and anxiety at subthreshold levels with a focus on eliminating fear, by training and rewarding calm and focused behaviors during stimulus exposure. The term *response substitution* might therefore apply to the end result of achieving both a desirable behavior and a calm response in the presence of the stimulus while *counterconditioning* would refer to the change in emotional state from one that is fearful to one that is positive and calm.

Sensitization

In sensitization, the pet's fear heightens with each exposure to the stimulus. Although the stimulus may be harmless, rather than habituating with repeated exposure, some pets become increasingly more fearful, which is how noise aversions and phobias might arise. The intensity of the stimulus, the genetics of the individual, and the level of arousal at the

time of exposure may be factors as to why some pets are sensitized to stimuli when exposed. Therefore pet owners must be cautioned that if their pet is exposed to a fearful stimulus and does not habituate, it should be removed from the situation and a desensitization and counterconditioning approach implemented.

Shaping (successive approximation)

Shaping refers to the process whereby pets can be trained to perform increasingly complex tasks by building on their existing knowledge. This is accomplished by gradually withdrawing rewards for general behaviors and progressively rewarding only the behaviors that more closely approximate the desired behavior. For example, shaping can be used to train a dog to sit or stay on its mat for progressively longer or to train gradually more relaxed responses. In successive approximation the pet might first be rewarded for a behavior that resembles the final desired outcome, such as by first teaching the pet to lie down at the owner's feet on a mat and gradually moving the location by 25–50 cm at each training session until the dog is lying on its mat in the next room. When walking on a leash the owner may begin by giving rewards every few seconds for the dog remaining on loose leash at the owner's side but gradually the length of time the dog must learn to walk on loose leash might be increased to a reward every minute or longer.

Systematic desensitization

Systematic desensitization is a behavior therapy technique that is used to modify behaviors (e.g., fear, aggression) by constructing a gradient of response-producing stimuli (beginning below the threshold that elicits a response) and repeatedly presenting them to the individual at gradually increasing intensities until they no longer elicit a response.

Systematic desensitization is often used in conjunction with counterconditioning to facilitate training. For example, a pet may be fearful of thunder but not fearful when a tape recording of thunder is played at low volumes. If the pet listens to the recording and shows no signs of anxiety, it is paired with something that has a high value, such as a food treat (or if it's a Border collie, an opportunity to chase a toy). By gradually increasing the volume over a period of time, the pet can be desensitized systematically to the fear-evoking stimulus and counterconditioned to be in a happy, food-anticipatory state when it hears the sound of thunder. The key is to expose the pet to a level of the stimulus that is below its threshold for anxiety, and then very gradually increase the intensity until it mimics real-life circumstances.

Taste aversion

Taste aversion is a specific form of aversive conditioning, in which the animal develops an aversion to a particular odor or taste that is associated with illness, following a single taste–illness pairing. Taste aversion is likely to be an innate defense mechanism, so that the animal learns to avoid potentially toxic substances. Taste aversion differs from other forms of aversion therapy or avoidance conditioning in that it generally takes a single event, and the illness may take place a considerable time following the ingestion of the

substance. In avoidance conditioning, immediate timing of the aversive stimulus with the unconditioned stimulus, and numerous repetitions, may be required before the aversion is conditioned.

Application of behavioral modification techniques

Training “settle” and predictable rewards

Training a dog to settle or relax on command is an important aspect of most canine-retraining programs. There are a number of ways that this can be achieved, but the key element is not just the behavior itself (e.g., sit, stay, lie on your mat), but that the response is gradually shaped with rewards to one that is more relaxed and of longer duration. This command could then be used if the dog tends to be out of control or overly excited during homecomings, when visitors arrive, or even prior to departures for the dog with separation anxiety. A cue word or command that achieves a relaxed state is also an important component of desensitization and counterconditioning programs. Training the dog to steady (not pull at the end of a leash), look or focus (with attention paid to the owner for successively longer periods of time), to lie down in a relaxed position, or to go to a selected relaxation location can be achieved by lure–reward techniques and shaping, head halter control, making all attention contingent on relaxed behaviors, rewarding with clicker or using Manners Minder for training to a location (Figure 7.5). Settle training is described in Box 7.2 (client handout #23, available online). If rewards are predictable and contingent on each of these responses, the behaviors can be trained each time a reward is given, until the pet offers the behavior to get the reward. These structured and predictable interactions (see structured interactive training in Chapter 20) also help the pet to calm since predictable rewards give the pet control over its environment and rewards.

Desensitization and counterconditioning

Systematic desensitization and counterconditioning are used in combination to change the pet's response to a stimulus from one that evokes fear, anxiety, or aggression to one that is positive. All stimuli that incite the undesirable response must be identified and a means of control must be established. For example, a distance gradient (i.e., exposure at sufficient distance to minimize the response), a volume gradient (e.g., a recording of the stimulus that can be reduced to a low-enough volume), or a similarity gradient (using a family member rather than a stranger) can be used to begin exposure. Favored rewards should also be placed along a gradient, with the favored rewards paired with the presentation of the muted stimulus. The mild stimuli are paired with presentation of the favored reinforcers and, as the pet makes positive associations with the stimulus, the intensity is gradually increased until counterconditioning has been successful with the full stimulus. In practice, it may be difficult to implement all aspects of counterconditioning because it may not be possible for owners to control all stimuli and to prevent unwanted exposure to the stimuli until counterconditioning is complete.

Box 7.2 Training a dog to settle or relax (client handout #23, printable version available online)

An important training exercise is to teach a dog to settle down or relax on command. For calming and settling a dog as a training command (e.g., steady, look, focus), the goal is to teach the dog to focus on the owner. Another form of settle (go to your mat) is intended to calm a dog that is overly anxious, aroused, excitable, or fearful in the home. Dogs should also be taught a relaxed walk on loose leash to help maintain a calm demeanor when outdoors on walks.

Once the dog has learned to settle, the command can be used to help achieve a calm response during the correction or management of a wide variety of behavior problems. It can be used to get the dog to focus when it might be overly excited or anxious in greeting family members, strangers, or other animals. It can also be used with dogs that become anxious as the owners prepare to depart or become overly excited when company arrives or when preparing for a walk.

Training a dog to settle and focus should begin in an environment where your dog is calm and there are minimal or no distractions. The owners will need to be able to cue their dog to settle with lure training or a leash and head halter, or by watching and observing the pet until it is sufficiently settled and marking the behavior with an immediate reward (such as with a clicker). Pets on a structured interaction program (see handout #13, available online) can be taught a settled sit or down each time they want attention or affection by waiting for the desired behavior and giving immediate attention as soon as the pet shows a settled sit or down. A cue (hand signal or command) is then added to be able to repeat the behavior reliably in a variety of situations and environments. Food, affection, or a favored toy can all serve as rewards if they are consistently given immediately following the behavior. You will need to be able to read and monitor canine body language and behavior (breathing, body postures, facial expressions, and the absence of any signs of anxiety) to be able to shape gradually more relaxed behaviors of increasing duration.

Calming exercises for any location**1. Teaching “steady”**

- While standing still, give the pet 1 meter (3–4 feet) of the leash. If the leash remains loose, occasionally give it a food or social reward and say “steady.”
- When the pet starts to walk away, the “steady” command is given. As the pet gets to the end of the leash and starts to tug and pull against the leash, a final “steady” command is given followed by a gentle pull on the leash to get the pet’s attention. Then return the slack on the leash as a reward.
- If the pet remains on loose leash, immediately give a treat or affection as a reward.
- After several repetitions, the pet should learn that it is rewarded for maintaining a loose leash.
- Practice a couple of times a day in the home with few distractions. As the pet gets better, gradually add distractions and start working outside.
- Progress to walking on loose leash using “steady” whenever your dog begins to pull or put tension on the leash. Give rewards after each short stretch that your dog walks without pulling and gradually make the walks slightly longer before rewards are given. If necessary, stop and begin again when the leash is slack; however, over the long term, the goal is for your dog to walk calmly by your side for some or all of its walk.
- This can also be used to stop tugging and pulling on the leash while walking or to get the pet to stand calmly when meeting or greeting visitors.

2. Teaching “look” or “focus”

- Show your dog a favored toy or treat and then hide it behind your back. Have your back against the wall or be in a corner so

the dog can’t get behind you. An alternative method is to hide the treat in your closed hand in front of your chest in a line between your dog’s eyes and your eyes.

- Say “look” or “focus” and as soon as your dog stops its attempt to get the treat and makes eye contact, use your reward word or clicker and give the treat. Repeat to improve consistency and immediacy.
 - Gradually increase the amount of time you require eye contact to last and then start adding distractions in the background like people playing or a fridge door opening. Your dog only gets rewarded after maintaining (i.e., not breaking) eye contact with you. Once the dog is consistent in giving the correct response even when there are distractions, go to other places (outside) and add mild distractions, such as another dog nearby or children playing. After each successful session gradually increase the distractions and work in busier environments.
 - The goal is for your dog to maintain calm and steady eye contact for several minutes, regardless of the amount of distraction and background activity. If the dog is focused but arousal is high, gradually work to shape calmer responses.
- 3. Teaching “settle” in a down position**
- Another method is to use food lure training to train the dog to lie down in a relaxed position, on its belly with both hind legs on the same side. If the pet is excited, barking, or unsettled, wait until it is calm to give the reward. Timing is everything, so clicker training can be a useful tool to achieve increasing relaxation. Reward progressively longer downs and more relaxed postures.
 - Gradually progress to longer down stays in a variety of environments and then gradually increase the background noise and distractions.
- 4. Head halter training**
- The head halter can be used concurrently with lure–reward training, or by itself, to teach the pet to assume a relaxed position.
 - The head halter is used immediately following the command to get the dog to focus and gently pull or prompt it into the settle position (steady, focus, down).
 - As soon as the pet relaxes, the tension on the leash is relaxed and a favored reward is given.

Indoor exercises

Although any of the above exercises can also be used for training a dog to be calm indoors, there are additional techniques that might help the dog to settle down quickly and effectively when indoors. These techniques can be used to help reduce anxiety associated with owner departures or fearful stimuli such as thunder, as well as to calm dogs that are unruly and excitable or overly aroused when visitors come onto the property or enter the home (see client handout #25, available online).

1. Teaching a settle location

- Training the dog to settle indoors can sometimes be more easily accomplished by using a settle area. The dog can be taught to “go to a mat” or “go to a kennel” where it learns to stay calmly for progressively longer periods of time for affection and food rewards and food-stuffed toys or chews.
- Food lure training, with or without the aid of a head halter, can be used to achieve the initial response. The dog is taught to stay calmly for progressively longer periods of time before the reward and affection are given.
- At first the owner may need to take the dog to the area to ensure success, but as the training progresses, the dog should learn to go to the area on command to receive its rewards.

Box 7.2 Training a dog to settle or relax (client handout #23, printable version available online)—cont'd

- If the dog is also taught to sleep in this area and favored toys are kept in the area, it may soon learn to go to this area to relax on its own.
 - Additional tools to help ensure effective timing of rewards include clicker training (where the dog can be rewarded immediately whenever it lies in the area and then for progressively relaxed behaviors) or a Manners Minder, which can be set up in the dog's settle location to deliver rewards remotely.
 - Once the dog will go to the area and settle on command, training should progress to situations where the dog is slightly more aroused, such as when there are stimuli outdoors, company arrives at the door, or when practicing departures. A leash and head halter left attached can help ensure success.
2. Settled sit or down stay
- Teaching a dog to a settled sit or down is discussed above. In addition, see our handout on structured interactive training (client handout #13, available online) which refers to structured interactions in which the dog must learn to sit or lie down (also known as "say please") prior to any affection or rewards being given. Since structured interactions and predictable consequences give dogs control over their rewards, this is an effective way to teach these behaviors and reduce underlying stress or conflict.
 - In effect, this means that there are three ways to teach the focused sit and relaxed down: (1) lure-reward training, as described above; (2) head halter training to prompt the desired behavior; and (3) avoiding all interactions until the desired behavior is observed and immediately rewarding the behavior with affection, treat, or clicker/treat. Once the behavior is achieved, the cue word or command should be added to put the behavior under verbal control.
 - The balance of the training involves monitoring facial expressions, body postures, and breathing to be able to reward and shape progressively more relaxed behaviors.
 - Training should then progress to longer sits and down stays in a variety of locations, and then adding background noises and distractions.

Controlled exposure

Controlled exposure techniques are intended to expose the pet to a muted or reduced intensity of the stimulus where an acceptable alternate response can be achieved (response substitution). For systematic desensitization, exposure begins at a level below that which triggers fear or anxiety. However, with controlled exposure, while the goal would also be to stay below the threshold, if the pet is exposed to a mild level of the stimulus, the session would continue until an acceptable response can be achieved. If the fear is low enough and the owner has good control and high-value rewards and has trained the dog to settle on cue, it should be possible to achieve a calm and focused outcome. The session must continue until the acceptable response (e.g., sit and focus) is achieved, the reward is given, and the pet has habituated to the stimulus. A control device such as a leash and head halter for dogs, a leash and harness for cats, or a wire crate might be most practical to prevent injury and

ensure and maintain the low-level exposure until the pet successfully habituates. Distraction devices such as a squeak toy, shake can, or soft verbal hiss might also be used to weaken the pet's focus on the stimulus and get the pet's attention on the owner. A favored treat should be given to mark the acceptable response and ensure a positive association with the stimulus (counterconditioning). As with desensitization, it will be necessary to identify and control each stimulus so that they can be exposed at gradually increasing intensity (set up to succeed). The trainer must remain positive and calm as anxiety and punishment will further aggravate the problem. The stimulus itself should not be threatening and neither the pet nor the stimulus should be removed until a successful outcome is achieved and reinforced. At subsequent sessions, the pet should be exposed to gradually higher levels of intensity as long as a positive outcome can be achieved. See [Boxes 12.4, 12.8, and 12.9](#) (client handouts #8, #9, #10, respectively, printable versions available online) for details.

References

- Hopkins SG, Schubert TA, Hart BL. Castration of adult male dogs: effects on roaming, aggression, urine marking, and mounting. *J Am Vet Med Assoc* 1976;168:1108–10.
- Nielsen JC, Eckstein RA, Hart BL. Effects of castration on problem behaviors in male dogs with reference to age and duration of behavior. *J Am Vet Med Assoc* 1997;211:180–2.
- Hart BL, Barrett RE. Effects of castration on fighting, roaming, and urine spraying in adult male cats. *J Am Vet Med Assoc* 1973;163:290–2.
- Mengoli M, Cozzi A, Chiara M, et al. Survey of possible changes in undesirable behavior after neutering in male dogs. *Proceedings of the 2010 European Behaviour Meeting*. Belgium: ESVCE; 2010. p. 189–93.
- Hart BL, Eckstein RA. The role of gonadal hormones in the occurrence of objectionable behaviors in dogs and cats. *Appl Anim Behav Sci* 1997;52:331–54.
- O'Farrell V, Peachey E. Behavioural effects of ovariectomy on bitches. *J Small Anim Pract* 1990;31:595–8.
- Kim HH, Yeon SC, Houpt KA, et al. Effects of ovariectomy on reactivity in German Shepherd dogs. *Vet J* 2006;172:154–9.
- Reisner IR. Dominance-related aggression of English Springer Spaniels: a review of 53 cases. *Appl Anim Behav Sci* 1993;37:83–4.
- McCarthy MM, McDonald EH, Brooks PJ, et al. An anxiolytic action of oxytocin is enhanced by estrogen in the mouse. *Physiol Behav* 1997;60:1209–15.
- Skyrme R, Mills DS. Pairing of vocal and visual commands during training. Does one overshadow the other? *Proceedings of the 7th International Veterinary Behaviour Meeting*. Belgium: Edinburgh, ESVCE; 2009. p. 95–6.
- Adler L, Adler H. Ontogeny of observational learning in the dog (*Canis*

- familiaris*). Dev Psychobiol 1977;10:267–72.
12. Chesler P. Maternal influence in learning by observation in kittens. Science 1969;166:901–3.
 13. Slabbert JM, Rasa OAE. Observational learning of an acquired maternal behavior pattern in working dogs' pups; an alternative training method? Appl Anim Behav Sci 1997;53:309–16.
 14. Mayoral N, Masy ED, Ruiz J, et al. Are puppies capable of learning through observational learning? Proceedings of the 2010 European Veterinary Behaviour Meeting. Belgium: Hamburg, ESCVE; 2010. p. 186–8.
 15. Tomlinson J, Zulch HE. Observational learning of secondary reinforcement in the domestic dog. Is it possible? Proceedings of the 7th International Veterinary Behaviour Meeting. Belgium: Edinburgh, ESVCE; 2009. p. 62–3.
 16. Herron M, Shofer F, Reisner I. Survey of the use and outcome of confrontational and non-confrontational training methods in client-owned dogs showing undesirable behaviors. Appl Anim Behav Sci 2009;117:47–54.
 17. Hsu Y, Sun L. Factors associated with aggressive responses in pet dogs. Appl Anim Behav Sci 2010;123:108–23.
 18. Blackwell EJ, Twells C, Seawright A, et al. The relationship between training methods and the occurrence of behaviour problems as reported by owners, in a population of domestic dogs. J Vet Behav 2008;3:207–17.
 19. Hilby EF, Rooney NJ, Bradshaw JWS, et al. Dog training methods; their use, effectiveness and interaction with behavior and welfare. Anim Welfare 2007;13:63–9.
 20. Blackwell E, Loftus B, Richards G, et al. How do people train their dogs? A survey of training techniques used and training class attendance by UK dog owners. Proceedings of the 2010 European Behaviour Meeting. Belgium: Hamburg, ESVCE; 2010. p. 179–81.
 21. Juarbe-Diaz SV, Houpt KA. Comparison of two antibarking collars for treatment of nuisance barking. J Am Anim Hosp Assoc 1996;5:231–5.
 22. Moffat KM, Landsberg GM, Beaudet R. Effectiveness and comparison of both a citronella and scentless spray bark collar for the control of barking in a veterinary hospital setting. J Am Anim Hosp Assoc 2003;39:343–8.
 23. Wells DL. The effectiveness of a citronella spray collar in reducing certain forms of barking in dogs. Appl Anim Behav Sci 2001;73:299–309.

Recommended reading

- Lindsay SR. Handbook of applied dog behavior and training, volumes 1–3. Ames, IA: Iowa State University Press; 2000, 2001, 2005.
- Mills DS. Training and learning protocols. In: Horwitz DF, Mills DS, editors. BSAVA manual of canine and feline behavioural medicine, 2nd ed. Gloucester, UK: BSAVA; 2009. p. 49–64.
- Pryor K. Don't shoot the dog. The new art of dog training. Gloucester: Ringpress; 2002.
- Pryor K. Reaching the animal mind: clicker training and what it teaches us about all animals. New York: Scribner; 2009.
- Reid P. Excel-erated learning. Explaining in plain English how dogs learn and how best to teach them. Oakland, CA: James and Kenneth Publishers; 1996.

Pharmacologic intervention in behavioral therapy

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Introduction

The timely and appropriate use of drugs may allow the pet owner an opportunity to resolve the pet's behavior problem successfully, or modify its behavior sufficiently to allow the pet to remain in the home. Behavior problems can be very disruptive for the family and the people living nearby, often to the point of severely affecting the human-animal bond. Thus, the quick and effective control of clinical signs is usually one of the main goals of behavioral treatment protocols. Drugs are one of the main adjunctive treatments to achieve that objective. Failure to identify and suggest potentially helpful pharmacological agents may mean the difference between a safe and healthy pet-owner relationship and the pet's demise. Drug selection requires an accurate

diagnosis of the behavior problem and a comprehensive knowledge of which drug(s) would be the safest and most effective for resolving the problem at hand (Box 8.1).

Drug prescribing must proceed in agreement with local regulations and licensing requirements. Since most drugs used in canine and feline behavior therapy are not licensed for use in pets, they should be used cautiously. Whenever possible, medications licensed for use in the species and for the intended purpose should be used. For off-label use (use not specifically indicated on the product label) or compounded medications, the hospital should ensure full disclosure and the owner should sign a release where appropriate (see Appendix C, form C.9, client form #5, printable version available online), indicating informed consent for the use of a product not licensed for this purpose. However, a release does not absolve the practitioner from liability, particularly

if the rationale for selection and use of the drug cannot be medically justified. Caution should be taken to assess carefully whether any concurrent medication, supplements, or diet is being utilized that in any way interact with the medication that has been selected. Of course, owner compliance, including ability to administer the medication, may also impact the choice of medication and whether compounding might be necessary (see below). Owners should be advised as to what behaviors are likely to be improved (i.e., intensity, frequency, severity) and over what time frame, and what side-effects or adverse events might be expected. Although the family should be advised to report any unexpected change in health or behavior immediately, the veterinary clinic should be proactive in regularly contacting the client to assess progress or potential problems. Veterinary literature should be regularly reviewed for reports of adverse effects or changes in dosage recommendations. Although human studies cannot necessarily be extrapolated to animals, it is also advisable to consult the human literature and manufacturers' data to determine areas of potential concern. Ideally, blood and urine tests should be performed before any behavioral drug is dispensed to rule out underlying medical problems and establish a baseline against which future tests can be measured. Testing should be repeated at regular intervals (minimally once a year) based on the pet's age and health and the potential side-effects of the medication being used. When there is more than one potentially effective treatment regimen, the safest course of action should be followed (Box 8.1).

In the European Union a standard general procedure exists for drug selection, where the drug of first choice should be one that is licensed for the species being treated, provided there is a suitable choice available. The second choice of drug to consider should be one that has been licensed in another animal species. The third choice should be one that has been licensed for use in humans, and the final choice, when the

other three choices are not possible, would be a drug that is available (perhaps on trial or through another country) but is as yet an unlicensed drug.

Although some older medications, such as acepromazine and the progestins, are still in frequent use, newer drugs that are nonaddictive, relatively free of potential organ toxicity, and cause minimal sedation are now available. Many of these drugs exert their effects on the specific mechanisms of behavior regulation that may need to be altered with little or no alteration of other behaviors. In some behavior cases where alterations in physiological neurotransmitter levels or function seem to occur, these drugs may help to re-establish normal neurotransmission. Side-effects may be less common since most selectively target specific neurotransmitter systems.

Evidence-based medicine and veterinary behavioral pharmacology

Most available information on drug therapy for behavior problems in companion animals comes from clinical experience of veterinary behaviorists as well as from inferred comparisons between psychiatric conditions and behavior problems of pets. According to the Oxford Centre for Evidence-Based Medicine scoring system (www.cebm.net), the weakest levels of evidence for measuring therapeutics (levels 4 and 5) are attributed to case-based studies, in vitro research, or expert opinion without crucial appraisal. A systematic review of case-control studies with homogeneity or individual case-controlled studies would receive a higher rating in terms of evidence (level 3), while a systematic review of cohort studies, individual cohort studies, and lower-quality randomized control trials (RCTs) would receive level 2 ratings. The gold standard (level 1a) would be a systematic review with homogeneity of RCTs.¹ However, with few published trials for most veterinary behavioral therapeutics, veterinarians have little access to such rigorous research. Whenever possible, it is clear that RCTs should be the standard way to assess efficacy of drug therapy in behavioral medicine, particularly regarding the placebo effect, which may be responsible for 50% or more of the effects in some behavioral studies. For instance, in a study in which fluoxetine was compared to placebo in the treatment of separation anxiety, the effect of treatment on global improvement ranged from 58.6% to 65.1% while the placebo group had improvements ranging from 43.4% to 51.3%.² In a recent study in which a homeopathic remedy for firework phobias was compared to placebo for the treatment of noise sensitivities, both treatment groups reported a significant level of change over the course of treatment but there was no evidence that the homeopathic remedy had any effect above the control group.^{3,4} In addition, knowledge of participating in a placebo-controlled trial appeared to have no effect on the owner's perception of treatment effect.⁴

In prior periods, the amount of published independent clinical trials on psychopharmacology of behavior problems in companion animals was sparse. One of the main limitations for conducting proper controlled clinical trials is the ethical concern of setting up a pure placebo group on a population of owned dogs presented for behavior problems. Fortunately, over the past few years, more and more clinical

Box 8.1 Considerations prior to prescribing or dispensing medications

1. Complete medical workup/premedication baseline
2. Accurate behavioral diagnosis
3. Age and health of pet
 - Concurrent medical problems
 - Concurrent medications and natural therapeutics (i.e., herbal remedies and dietary supplements)
4. Potential side-effects and adverse effects
5. Owner compliance
 - Cost
 - Dosing frequency
 - Mode of administration – owner's ability to comply
 - Compounding/transdermal – are there data for stability, efficacy?
6. Expected time to efficacy/improvement
7. Monitoring requirements – when, what tests, how often?
8. Need for concurrent behavioral and environmental management
9. Severity of the problem, owner's ability to tolerate the problem, immediate danger to pet and others, need for quick control to avoid rehoming or euthanasia

trials have been conducted on drug treatment of behavior problems of dogs and cats. For example, the vast majority of available studies on the use of fluoxetine to treat canine behavior problems have been published since the year 2000. Recently, a systematic review of RCTs examining the effects of therapeutic agents on urine marking in cats has been published, representing the highest level of evidence for the use of those drugs to treat that particular condition.⁵

A trend is observed in behavioral medicine to focus research on the use of a few molecules to treat a reduced list of conditions. Most published trials on canine behavioral psychopharmacology involve fluoxetine and clomipramine. Separation anxiety is the primary focus of research in most of those papers, followed by compulsive disorders like acral lick dermatitis and tail chasing.

Recently laboratory models have been developed for a variety of behavior problems, allowing for the assessment of drugs, natural supplements, and behavior products in a controlled environment, including minimal subject variability, validated measures of behavior, and removal of owner bias. An example of this approach is the work done by CanCog Technologies (cancog.com) to develop a variety of validated models for: (1) learning and memory tasks in dogs and cats with specific applications for cognitive dysfunction and brain aging (see [Chapter 13](#)); (2) fear of noises⁶; and (3) fear of humans.⁷ These models have proven invaluable in validating the efficacy of a number of diets, natural supplements, and drugs that are now licensed for use in dogs and cats. Nevertheless, while laboratory models are an effective means of supporting the efficacy of a product over a placebo or control group, clinical trials in affected pets are necessary to support the efficacy of the product for specific behavioral applications in a real domestic environment.

Many recommended drugs in behavioral medicine have been widely used in humans to treat psychiatric conditions. Nevertheless, while disposition and metabolism for some of these drugs have been determined for dogs and cats, this is not always the case. Therefore direct extrapolation of dosages of human psychotropic drugs to animal use may not be accurate, as drug metabolism (including metabolites, half-life, route of excretion) as well as neurotransmitter and receptor effects may vary between species. In fact, for some drugs, the active metabolites in humans may not be produced in the same amount and routes of excretion may vary.

Compounding might be considered when dose, compliance, or availability is an issue. However, solubility, stability, absorption, and potency are potential concerns. Specifically, drugs that are packaged in blister packs or moisture-proof barriers may not be amenable to compounding into liquid formulations, while drugs originally packaged in light-proof containers may be inactivated if exposed to light. In addition, transdermal medications can be an easy and convenient way to administer medications, particularly in cats. However, in one study the bioavailability of fluoxetine was approximately 10% of oral dosing, and in another study systemic absorption of amitriptyline and buspirone was found to be negligible (compared to oral dosing).^{8,9} Thus, transdermal medications are not currently considered an effective method to administer psychoactive drugs in dogs and cats.

Drug dosage information is provided in [Appendix D](#).

Understanding drug action and drug selection

In order to decide if medication is needed to treat one particular condition and in that case what drug can be more effective, the clinician needs to consider four elements:

1. What is the presenting clinical condition?
2. What elements of that particular behavior condition could be modified with drugs?
3. How are the drugs integrated in the overall treatment protocol?
4. What are the available drugs and what are their pharmacological profiles?

Target conditions for drug therapy

Clinical trials usually refer to the use of specific drugs to treat a specific diagnosis, like canine separation anxiety, noise sensitivities, or urine marking in cats. Nevertheless, it is important to realize that there are no drugs to treat specific diagnoses, but to modify some of the underlying motivational states, emotions, and mechanisms of behavior control, like fear, anxiety, or the inability to withhold a behavior response.

Most psychotropic drugs used in behavioral medicine exert their effects on the so-called diffuse modulatory neurotransmitters, including serotonin, dopamine, norepinephrine, and acetylcholine ([Table 8.1](#)).

Neurons of the diffuse systems arise from relatively small nuclei of the brainstem and project to extensive areas of the brain, from the limbic system to the neocortex. As a result, the aforementioned neurotransmitters act as modulators of broad aspects of behavior control, including motivation and emotional states, which can be the same across different behavior conditions. This mechanism of action is in clear contrast with the frequent view of neurotransmitters as quite precise and discrete ways of conveying information from one specific part of the central nervous system (CNS) to another. For this reason the same drug is often prescribed to treat apparently different diagnoses. As an example, the array of conditions that can be treated with fluoxetine includes urine marking in cats, separation anxiety in dogs, acral lick dermatitis in dogs, and aggression. The reason is that fluoxetine affects the turnover of serotonin, a neurotransmitter involved in the regulation of wide aspects of behavior, from fear and anxiety to aggression and impulse control.

In addition to the diffuse modulatory pathways, the benzodiazepines act on gamma-aminobutyric acid (GABA), which causes mostly inhibitory effects in the CNS and is involved in the control of areas of clinical relevance such as fear and anxiety.

Many psychotropic drugs act on more than one neurotransmitter system. For instance, clomipramine influences the serotonin turnover, but also has actions on norepinephrine, acetylcholine, and histamine. Furthermore, drugs acting on the same modulatory system can do so by interacting on different mechanisms or receptors for that particular neurotransmitter. The range of pharmacological actions characteristic of each drug is one of the reasons why certain drugs may be more effective to treat one condition than others with an apparently similar profile. Thus, different

Table 8.1 Drugs that affect neurotransmitters

Neurotransmitter	Drugs that increase effects	Drugs that decrease effects
Acetylcholine	Carbachol, bethanechol, cholinesterase inhibitors (donepezil, galantamine, neostigmine, physostigmine)	Atropine, scopolamine curare (blocks N-m nicotinic synapses)
Dopamine	L-DOPA, amphetamine, methylphenidate, apomorphine, bromocriptine, selegiline (MAO-B inhibitor), MAO inhibitors	Neuroleptics (e.g., acepromazine, risperidone)
GABA	Benzodiazepines	Flumazenil
Norepinephrine	Alpha-adrenergics (ephedrine, phenylpropanolamine), amphetamine, MAO inhibitors	Beta-blockers (pindolol, propranolol), alpha-agonist (clonidine), risperidone
Serotonin	Tryptophan, selective serotonin reuptake inhibitors, sumatriptan, MAO inhibitors, buspirone	Cyproheptadine, risperidone

GABA, γ -aminobutyric acid; MAO, monoamine oxidase.

drugs can be used to treat the same condition and the same condition can be treated with different drugs.

Overall framework of drug therapy

From a clinical perspective, there are four situations where drug therapy might be indicated for behavioral conditions: (1) as an adjunct to behavior therapy; (2) in drug desensitization; (3) when medication is necessary as the primary mode of treatment; and (4) when an underlying pathology is present.

Adjunct to behavior therapy

Psychotropic drugs are most commonly used as an adjunct to behavior therapy. Factors to consider include whether there may be a drug that could help to resolve the problem more quickly, potential adverse effects of the medication, the owner's commitment to the behavioral program, and the humane considerations for the pet (i.e., whether the pet's interests might be better served with medication). The treatment of separation anxiety, fears, and phobias, and aggression are examples of conditions in which a drug might help facilitate the initiation and implementation of behavior therapy. For example, studies on the use of clomipramine for separation anxiety showed that there was greater and faster improvement in the group with drugs and behavior modification compared with the group with behavior modification alone (i.e., placebo group).¹⁰ Choosing an appropriate drug may provide an opportunity to resolve the problem in a quicker or safer manner. However, without concurrent behavioral modification, the problem may not improve significantly and is likely to recur when the drug is removed.

Drug desensitization

Drug desensitization is a technique that can be applied when the stimulus cannot be effectively controlled or reduced, or when there are multiple stimuli that lead to fear or aggression. The drug should be given at sufficient dosage so that the pet is relaxed and calm when exposed to the stimulus. By pairing exposure to the stimulus with favored treats, the

association can be made even more positive (counterconditioning). Even if the drug alone does not completely calm the pet, it may still be possible to reduce its arousal enough to get the pet to respond to a training command such as focus, sit/stay, or settle, and this response can then be reinforced (response substitution). Drug-aided desensitization should be combined with other behavioral modification techniques such as systematic desensitization, controlled flooding, counterconditioning, and differential reinforcement (see [Chapter 7](#)) so that behavioral techniques, rather than the drug itself, are the principal methods of altering behavior. As soon as the successful response (and mood) can be consistently achieved in the presence of the stimulus, the drug can be gradually reduced at subsequent training sessions.

Medication is necessary as the primary mode of treatment

A third indication for drug use is when a behavior problem is unlikely to be corrected by behavioral modification techniques alone. This might be the case for urine marking, compulsive disorders (e.g., acral lick dermatitis (granuloma), tail chasing, spinning). Not only might these behavioral problems require drugs to help control the condition, but it may not be possible to withdraw the drugs without the condition recurring.

Underlying pathology present

A final indication for drug use is when underlying pathology, whether medical or behavioral, is present. Medical problems that may be involved in the expression of behavior problems include endocrinopathies (hyperthyroidism, hypothyroidism, and hyperadrenocorticism), epilepsy, hepatic encephalopathy, interstitial cystitis, cognitive dysfunction syndrome, chronic painful conditions, or neuropathic pain (see [Chapter 6](#)). Similarly, behavioral pathology (i.e., where behavioral changes may be due to altered neurotransmitter function) may only improve with appropriate drug therapy. Compulsive disorders, attention deficit hyperactivity disorders (ADHDs), generalized anxiety disorders,

and some of the Pageat (French) classifications of behavior disorders (such as hypersensitivity-hyperactivity and dissociative disorders) may require medication to treat the problems effectively (i.e. mental health disorders).

Classification and selection of psychotropic drugs

A psychotropic drug can be named and classified according to different criteria, including the chemical structure, the main pharmacological action, and the most common clinical use. For instance, alprazolam can be referred to as a benzodiazepine, a drug acting on GABA, or an antianxiety agent.

When referring to a drug by the neurotransmitter involved in its main pharmacological action it is important to remember that the vast majority of agents exert secondary actions in other neurotransmitters. These secondary effects may either enhance the therapeutic value of the drug or be responsible for its adverse side-effects.

Labeling a drug for its therapeutic value might seem clear and self-explanatory but it could create some confusion for both the clinician and the patient. Many conditions in human beings, like anxiety or panic, have a clear counterpart in veterinary medicine. However, others, like depression or schizophrenia, don't. Since most psychotropic drugs used in behavioral medicine are only licensed for humans, clinicians must emphasize to their clients that information contained on the package insert (or in books, brochures, or websites) refers to use in humans and does not necessarily apply to animals. For example, paroxetine is often classified as an antidepressant, but its use in veterinary behavioral medicine cannot be understood in terms of that diagnostic category. Furthermore, it is becoming more and more clear in veterinary behavioral medicine and human psychiatry that very few, if any, psychotropic drugs can be considered diagnosis-specific. Thus, the current trend in human psychiatry is to abandon the terminology based on indications in favor of one referring to the primary effects on neurotransmission or to the chemical structure.¹¹

Before considering the different categories of psychotropic drugs it is important to understand the neurophysiology of the main neurotransmitters involved in their action.

Neurotransmitters

Neurotransmission is a complex process, basically resulting from a dynamic interaction between the neurotransmitter, the presynaptic and postsynaptic receptors, the reuptake pump, and the degradation enzymes. Psychotropic drugs act at varying sites, presynaptically, postsynaptically, and within the synapse. The production and release of the neurotransmitter may be enhanced, drugs may block the effects of the neurotransmitter at the postsynaptic receptor, drugs may affect receptors on the presynaptic neuron as well as on the postsynaptic neuron, and drugs may block the reuptake of neurotransmitter into the presynaptic neuron. Drugs may also act by inhibiting the breakdown of neurotransmitters within the presynaptic neuron or within the synapse.

After being released by the presynaptic neuron, the neurotransmitter interacts with both presynaptic and postsynaptic

receptors, resulting in major biological changes within the presynaptic and the postsynaptic neurons. Activation of these sites may influence a variety of physiological activities, including ion movement across the cell membrane, changes in cell membrane potential, and activation of intracellular enzymes, mostly through G-proteins.

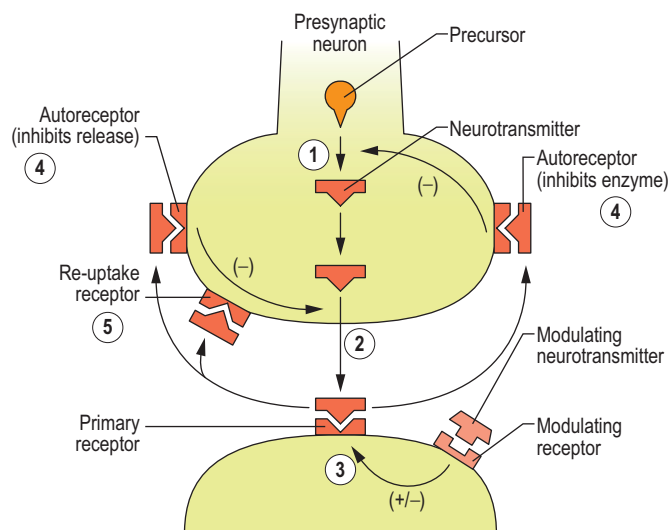
Drugs that have molecular conformations similar to that of the primary neurotransmitter can attach to the receptor sites and either mimic neurotransmitter activity (agonists) or block normal neurotransmitter activity (antagonists), depending on the specific character of the molecule. Different receptor subtypes exist for each neurotransmitter, which can have different functions and may be differentially expressed in different brain regions. Many psychotropic drugs are able to target one or more specific subtypes of receptors.

Many presynaptic receptors have a self-regulatory function on the neurotransmitter (autoreceptors). Activation of these sites following attachment of neurotransmitter molecules diffusing through the intercellular space provides negative feedback by having an inhibitory influence on neurotransmitter synthesis and release. Thus, pharmacological blockage or desensitization at these sites results in less inhibition and increased synthesis and release of neurotransmitter molecules.

After detaching from receptor sites, the neurotransmitter molecules are either enzymatically degraded or diffuse to reuptake receptor sites on the presynaptic neuron, where they attach and are transferred into the cell. The reuptake pump decreases the neurotransmitter's interneural concentration by physically removing molecules from the interneural space, but also indirectly by increasing the intracellular storage pool. This occurs because an intracellular feedback system inhibits neurotransmitter synthesis as the concentration of neurotransmitter increases within the neuron. Thus, the reuptake receptor site provides an excellent target for drug action by effectively increasing the amount of neurotransmitter available to interact with the postsynaptic cell. Many psychotropic drugs exert their action by either blocking the degrading enzyme or blocking the reuptake pump (Figure 8.1).

Up to a certain point, neurons are able to self-regulate neurotransmitter function by controlling the expression of its receptors. When neurotransmitter levels in the synaptic cleft are kept high and sustained, a process called downregulation reduces the number of receptors. If neurotransmitter levels are low, an opposite mechanism of upregulation results in an increase in the number of receptors.

From a clinical perspective, understanding the complexity of neurotransmission is necessary to explain some of the characteristics of drug action. For instance, when a serotonin reuptake inhibitor such as fluoxetine is given, blocking the reuptake of serotonin into the neuron results in an increase in serotonin in the synaptic cleft, which stimulates the postsynaptic receptors. This accumulation of serotonin also activates autoreceptors, which decreases the release of neurotransmitter from the presynaptic neuron. With time, the overstimulated autoreceptors become hyposensitized and inhibition of serotonin synthesis and release wanes, so that the net effect is increased serotonin transmission. This sequence of biochemical changes, including the downregulation of receptors, is the



Stages of Neurotransmission

1. Synthesis of neurotransmitter in the prejunctional neuron
2. Release of neurotransmitter in response to an action potential
3. Interaction of neurotransmitter with the receptor
4. Auto-regulation
5. Re-uptake

Figure 8.1 The stages of neurotransmission and receptor.

likely reason for the delayed effect of fluoxetine and other reuptake blockers.

The influence of the primary neurotransmitter on the effector cell may be modulated by secondary neurotransmitters, such as polypeptides, as they interact at separate modulator receptor sites on the postsynaptic cell membrane. Attachment of modulatory neurotransmitters at these sites can result in the inhibition or facilitation of the effect of a primary neurotransmitter on the postsynaptic cell. Drugs with a correct fit can also work at these sites to regulate neurotransmitter effect.

The neurotransmitters that are altered by drugs in companion animal behavioral medicine are primarily serotonin, norepinephrine, dopamine, acetylcholine, GABA, and excitatory amino acids such as glutamate. Complex dynamic relationships exist between the different neurotransmitters. For instance, attention to external stimuli results from a balance between the levels of norepinephrine and dopamine.

It is important to realize that the mechanisms of action of most psychotropic drugs have not been fully elucidated. This could be an additional factor to explain the different clinical responses to drugs apparently belonging to the same category.¹⁰

The cholinergic system

Acetylcholine

Acetylcholine's main involvement in behavior is linked to its action within the CNS supporting mnemonic function through the activation of different structures of the cortex and the limbic system. A defect in central cholinergic transmission may lead to learning and memory deficits and has

been found in human patients with Alzheimer's disease. The adverse effects of many of the psychotropic medications are derived from their ability to block muscarinic acetylcholine receptors and include sedation, dry mouth, and constipation.

Chemistry and pharmacology

Acetylcholine is synthesized from the union of acetyl-coenzyme A and choline in the axonal boutons and is stored in the synaptic vesicles. Acetylcholine action is rapidly terminated by the enzyme acetylcholinesterase and most of the choline necessary for the production of acetylcholine is obtained through reuptake from the synaptic cleft. It is the only major neurotransmitter not derived directly from an amino acid.

In vertebrates, acetylcholine is the neurotransmitter at all neuromuscular junctions and is involved in preganglionic to postganglionic neurotransmission for both the sympathetic and parasympathetic nervous systems (nicotinic synapses). Nicotinic receptors are excitatory. There are both N-m nicotinic receptors, which are located at the neuromuscular junction leading to muscle contraction, and N-n receptors, which are found in the brain, adrenal medulla, and autonomic ganglia. Acetylcholine is also the postganglionic neurotransmitter of the parasympathetic nervous system (muscarinic synapses). Muscarinic stimulation leads to a decrease in heart rate and cardiac output and arteriole vasodilation, and an active digestive system. Five subtypes of muscarinic receptors have been identified, each acting on a different secondary messenger system. Acetylcholine is present in subcortical structures above the brainstem, especially in the area of the lower part of the basal ganglia named the nucleus basalis of Meynert, which is deeply involved in the neurophysiology of learning.

Atropine blocks muscarinic synapses and therefore the effect of the parasympathetic system at the target organs, while curare blocks nicotinic synapses, thereby paralyzing skeletal muscles. Acetylcholinesterase inhibitors, such as some organophosphate compounds, potentiate the effects of cholinergic activity, while atropine acts as an antidote by blocking cholinergic receptors in the brain.

Monoamines

This neurotransmitter group is divided into catecholamines, indoleamines, and histamine. The catecholamines norepinephrine (noradrenaline), epinephrine (adrenaline), and dopamine are all synthesized from the amino acids tyrosine and phenylalanine, and share a common chemical structure. The indoleamines serotonin (5-hydroxytryptamine) and melatonin are synthesized from tryptophan.

Catecholamines are the neurotransmitters associated with the arousal of the autonomic nervous system. Catecholamine depletion in the brain results in mood changes and locomotor deficits. During stressful or fearful moments, the catecholamines dopamine and norepinephrine are released, resulting in CNS stimulation and anxiety. Chronic stress might lead to exhaustion and depletion of norepinephrine and dopamine and resultant depression. Almost all classes of psychotropic drugs interact in one way or another with the monoamine system. There are numerous catecholamine receptors, including five dopaminergic receptors and four

noradrenergic receptors. Many of the receptors affect the postsynaptic neurons by stimulating adenylate cyclase to convert adenosine triphosphate to cyclic adenosine monophosphate, an important secondary messenger.

Dopamine

Dopamine is involved in the regulation of many aspects of behavior, including motivation, social bonding, reward-based learning, attention, and the control of voluntary movements. Excessive dopamine may be associated with stereotypies and schizophrenia. Altered dopamine transmission may lead to behavioral changes such as decreased alertness, cognitive decline, anxiety, depression, extrapyramidal signs, Huntington's chorea in humans, and parkinsonian-like tremors, and may be a contributory factor in certain forms of pituitary-dependent hyperadrenocorticism. In veterinary medicine, drugs blocking the inactivation of dopamine are used to treat clinical conditions like cognitive dysfunction, stereotypies, fear, and anxiety.

Chemistry and pharmacology

Dopamine is a neurotransmitter that is synthesized from tyrosine by dopaminergic neurons. Tyrosine is converted to levodopa and then dopamine and stored in prejunctional vesicles. After release, dopamine interacts with dopaminergic receptors. This is followed by reuptake by the prejunctional neuron. Levels are held constant by changes in tyrosine hydroxylase activity and not by levels of tyrosine. Therefore drugs that reduce the activity of the enzyme will lead to a reduction in catecholamine production. Dopamine is inactivated by the enzymes monoamine oxidase (MAO), primarily MAO B, and by catechol-O-methyltransferase (COMT) into dihydroxyphenyl acetic acid and homovanillic acid (HVA). HVA is used as a marker of dopamine turnover in humans. Dopamine neurons in the midbrain extend into the limbic system and cortex. Increases in dopamine, such as might be caused by amphetamines or apomorphine, are associated with stereotypic behaviors. The neurotoxin 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP), which depletes the brain of dopamine, will cause irreversible parkinsonian signs in humans and alterations in circadian rhythms and increased cortisol output in dogs. The selective MAO B inhibitor, selegiline, may therefore be useful in the treatment of some of these conditions.

Norepinephrine

Norepinephrine, also known as noradrenaline, is the primary catecholamine neurotransmitter in the CNS and affects mood and arousal. It is synthesized from tyrosine in noradrenergic neurons. The locus ceruleus, which is located in the gray matter of the pons, is the principal noradrenergic nucleus. Noradrenergic neurons in the locus ceruleus send their processes into the thalamus, cerebral cortex, cerebellum, and spinal cord. Norepinephrine is also the neurotransmitter of the sympathetic postganglionic neurons. Following synthesis, dopamine is taken up into storage vessels where it is converted to norepinephrine. Norepinephrine is stored in prejunctional vesicles and, when released, interacts with noradrenergic receptors. The effects of norepinephrine are primarily terminated by reuptake at the prejunctional

neuron, similar to dopamine. Norepinephrine is also broken down by MAO A and by COMT.

Epinephrine

In terms of behavior regulation, epinephrine, also known as adrenaline, is directly involved in the autonomic response of the acute stress response. Drugs that block beta-receptors for epinephrine, such as propranolol, may therefore block some of the physiological signs associated with fear. Similarly, alpha-2 agonists may also reduce fear by blocking norepinephrine release through activation of alpha-2 receptors on the presynaptic neurons in the locus ceruleus.

In response to norepinephrine release, epinephrine is secreted from the adrenal gland and together they cause sympathetic effects, e.g., pupillary dilation, piloerection, tachycardia. There are both alpha- and beta-adrenergic receptors. Activation of alpha-receptors leads to vasoconstriction, increased cardiac contractile forces, iris dilation, intestinal relaxation, pilomotor contraction, contraction of the intestinal and bladder sphincters, and inhibition of the parasympathetic nervous system. Stimulation of beta-one (β_1) receptors leads to an increase in cardiac output while β_2 receptor stimulation causes vasodilation, intestinal relaxation, uterine relaxation, and dilation of coronary vessels as well as bronchodilation.

Serotonin

Serotonin (5-hydroxytryptamine; 5HT) is probably the most relevant neurotransmitter in behavioral medicine, with many drugs exerting their primary action on serotonin pathways. The effects of serotonin on behavior may be direct but also related to its role as regulator of other neurotransmitters. The role of serotonin in behavior is very complex and includes the regulation of mood and emotional states, like fear and aggression, arousal, impulse control, sleep-wake cycle, food intake, and pain.

Chemistry and pharmacology

Serotonin is synthesized from tryptophan by serotonergic neurons and is found mainly in cells in the midline raphe. There are 14 different classes of serotonin receptors. 5HT_{1A} receptors affect mood and behavior while 5HT_{1D} receptors affect cerebral blood flow. Urinary 5-hydroxyindoleacetic acid (5HIAA) excretion in the urine may be indicative of serotonin turnover.

Serotonin levels are controlled by cellular uptake of tryptophan and the action of tryptophan hydroxylase, which is involved in the rate-limiting step in serotonin synthesis. Tryptophan is discussed in detail in [Chapter 9](#). Inactivation is by reuptake or by breakdown by MAO. An increase in serotonin may be associated with an activation of the pituitary-adrenal axis. A decrease in serotonin may lead to depression, increased anxiety, aggression, and decreased food intake. In humans, altered serotonergic system function is associated with hyperaggressive states, schizophrenia, affective illness, major depressive illness, and suicidal behavior. Increasing or normalizing serotonin levels may be useful in the treatment of depression in people, compulsive and stereotypic disorders, and some forms of aggression and anxiety. Selective serotonin reuptake inhibitors (SSRIs)

and tricyclic antidepressants (TCAs) increase serotonin availability by decreasing reuptake, and MAO inhibitors (MAOIs) increase serotonin by decreasing serotonin breakdown. Serotonin agonists have been shown in rat studies to reduce offensive aggression, without blocking defensive aggression. Impulsivity (disinhibition, unpredictability, prolonged arousal) may be correlated with the presence of low serotonin metabolites in the cerebrospinal fluid (5HIAA).¹² This is also true in humans regarding impulsive violent offenders. Serotonin reuptake inhibitors may decrease these forms of aggression while cyproheptadine (serotonin agonist) may increase aggression. In studies of nonhuman primates increased serotonin was correlated with higher social rank but inversely correlated with aggression.¹³ In primate studies, fluoxetine inhibited impulsivity in a resident model.¹⁴ Mice lacking the 5HT1B receptor were more aggressive, while mice lacking 5HT1 receptors were more anxious.^{15,16} Serotonin may act to inhibit aggression, at least in part, by antagonizing the aggression-promoting effects of vasopressin. It has also been suggested that there is a relationship between dopamine and serotonin levels in that higher levels of 5HT may inhibit dopamine release. In fact, one factor in schizophrenia in humans may be decreased inhibition of the release of dopamine by 5HT in the mesencephalon and frontal cortex, and that treatment should help to normalize the relationship between 5HT and dopamine. Recent canine studies have demonstrated differences within breed in 5HT levels between aggressive and nonaggressive dogs.^{17–19}

Histamine

Histamine is found in low quantities in the brain. It may help to regulate body rhythms, thermoregulation, and neuroendocrine functions. Histamine activity is high during the waking state, reduced during slow-wave sleep, and nearly absent during rapid-eye-movement (REM) sleep. Its precursor is histidine. Histamine receptors are found primarily in the hypothalamus. Histamine receptors initiate secondary messenger systems.

Amino acids

Amino acids are the most prevalent of the CNS neurotransmitters. In contrast with the diffuse modulatory systems, they are involved in rapid point-to-point communication. Glycine, glutamate, and aspartate are three of the most important of the 20 amino acids that function as neurotransmitters. Glycine is an inhibitory neurotransmitter of the hindbrain and spinal cord. Glutamate is an excitatory amino acid, which may be produced in abnormal levels in aggression and impulse control disorders. *N*-Methyl-D-aspartic acid (NMDA) antagonists such as memantine suppress glutamate, as do barbiturates and progestins. Tryptophan, a precursor to serotonin, has been used as a food supplement as a means of enhancing serotonin transmission. Details can be found in [Chapters 9 and 11](#).

Gamma-aminobutyric acid

GABA causes mostly inhibitory effects and is the most widespread neurotransmitter in the brain. It is synthesized from glutamic acid. After it interacts with its receptor, there is

active reuptake by the presynaptic neuron. GABA is metabolized by GABA transferase. Seizure activity and Parkinson's disease may be associated with GABA decreases or disorders, so that GABA agonists such as benzodiazepines can be useful in the treatment of these conditions. GABA agonists may also be helpful in the treatment of anxiety disorders.

Neuropeptides

Endorphins and neurokinins (substance P and NK1)

This group is composed of molecules that are short-chained amino acids. They mainly function as modulators of other neurotransmitters, evoking facilitation or inhibition of neurotransmitter activity at the postsynaptic receptor site. The opioid system plays an important role in mediating both physical pain and social affective disorders.²⁰ Endogenous brain opioids may be involved in the development and maintenance of social behavior and social attachments. Opioids have been shown to reduce crying and motor agitation in puppies during social isolation. Opioid administration in socially deprived kennel dogs has also been shown to ameliorate chronic emotional distress while opioid blockade (i.e., administration of naloxone) appears to intensify emotionality. On the other hand, since morphine reduces social need, it appears to decrease social solicitation, while naloxone increases solicitive behavior, including tail wagging and face licking.²¹ Therefore opioids may play a role in the development and treatment of fear and anxiety. CNS endorphin release has been implicated in some compulsive disorders involving stereotypic behavior, although the role is still not well understood.

Substance P is a neuropeptide that is found in the spinal cord and CNS; it is a modulator of nociception involved in signaling the intensity of noxious stimuli. Along with neurokinin 1 (NK1), substance P is likely involved in the body's response to stress, anxiety, invasion of territory, and noxious or aversive stimuli. Substance P is present in the limbic system, including the hypothalamus and amygdala, and may play a role in emotional behavior. NK1 is present in the hypothalamus, pituitary, and amygdala, which play a role in affective behavior and response to stress. In cats, NK1 substance P receptors in the midbrain periaqueductal gray potentiate defensive rage and suppress predatory aggression.²² Substance P is one of the primary neurotransmitters released during tissue and mast cell damage.²³ Blocking substance P might reduce inflammation, pain, nausea, and neuropathic pain.²⁴ Therefore, as a substance P inhibitor (NK1 antagonist), maropitant citrate (Cerenia: Pfizer Animal Health) may reduce neurogenic inflammation, and substance P inhibitors have potential applications for inflammatory conditions in humans.²⁵ Although there have been no published studies to date on its efficacy as an anti-inflammatory agent in pets, it has been reported to be used anecdotally on an extra-label basis for its anti-inflammatory effects at 1–2 mg/kg twice weekly, every other day or 5 days on and 2 days off (Mandelker, L., personal communication, 2010). It should not be used for long-term daily use as depletion of substance P could lead to depletion in dopamine and resultant parkinsonian-like tremors, although in a study of 15 days of daily injections of maropitant citrate in cats at up

to 5 mg/kg for 15 days, it was well tolerated with no adverse effects, except for one cat that developed mild tremors during sleep (but no signs when awake).²⁶

For nausea or vomiting, a dose of 2 mg/kg can be used daily PO for up to 5 days; the oral product is not licensed for cats, but has been used at 0.5–1 mg/kg daily PO for 5 days (off label).²⁶ The product is also available in injectable form, and the dosage for acute vomiting is 1 mg/kg SQ once daily, for up to 5 days in dogs 8 weeks of age and older, and in cats 16 weeks of age and older (label indications may vary by country).²⁶ For motion sickness the canine dose is 8 mg/kg daily for 2 days.

Other neurotransmitters

There are numerous other mediators of neurotransmitter release (e.g., encephalins, nitric acid), but further discussion is beyond the scope of this text.

Hormones

Endogenous compounds such as hormones or other substances that are naturally produced by the body have generated renewed interest for the treatment of human psychiatric disorders. The idea is that if we administer substances that the body already has, we can rebalance underlying deficits. Recent studies have shown that estrogen supplementation, growth hormone, and even secretin, which has been trialed in the treatment of autism, may have beneficial effects in depressed patients. Although some may consider that using substances already found in the body is somehow safer, hormone excess can also lead to serious medical problems. Melatonin is covered in detail in [Chapter 9](#).

Vasopressin

Vasopressin, in addition to its effects as an antidiuretic hormone, affects a variety of functions, including cardiovascular regulation, antipyresis, learning, memory, and arousal. In hamster and rat studies, injections of vasopressin in multiple CNS sites led to offensive aggression, while vasopressin receptor antagonists inhibit aggression. It has been hypothesized that, at least in the hamster, serotonin inhibits fighting by antagonizing the aggression-promoting action of vasopressin. A similar reciprocal relationship between vasopressin and serotonin may also exist in humans, so that in some personality disorders associated with aggression there may be elevated vasopressin, which may be inhibited by serotonin.

Main classes of psychotropic drugs

Neuroleptics/antipsychotics

Neuroleptics are drugs that block dopamine receptors in the brain, causing a nonspecific depression of the CNS with a reduction of motor function and reduced awareness of external stimuli. Classical neuroleptics include the phenothiazines, haloperidol, and thioridazine. Neuroleptics have been widely used in veterinary medicine as tranquilizers and also to control motion sickness. Nevertheless, they are currently not considered first-line drugs for any of these conditions.

Phenothiazine tranquilizers, such as *acepromazine*, *chlorpromazine*, or *promazine*, have been used for rapid tranquilization and also to treat the clinical signs associated with fearful, anxious, and phobic behaviors. Tranquilized pets should be cautiously assessed as phenothiazines have a variable effect on aggression, and some patients may be more reactive to noises and may easily startle. Antipsychotics may also be useful in controlling productive signs of canine anxiety such as destruction, escape, and agitation, such as in thunderstorm phobias and separation anxiety. However, they are not true antianxiety agents and their use is limited as adjuncts for behavior modification therapy. Benzodiazepines are preferable to neuroleptics whenever a rapid control of anxiety is required. They specifically target anxiety and do not have the potential side-effects of neuroleptics, which include hypotension (due to alpha-adrenergic blockade), decreased seizure threshold, bradycardia, ataxia, and extrapyramidal signs such as muscle tremors, muscle spasms, muscle discomfort, and motor restlessness. The so-called high-potency neuroleptics, such as perphenazine and haloperidol, are less sedating but with the highest potential for extrapyramidal effects. Caution should be taken in patients with liver disease because of slow hepatic clearance.

Due to their antiemetic properties, antipsychotics have been also extensively used for motion sickness. However, the NK1 antagonist maropitant citrate (Cerenia) offers a better alternative to acepromazine for this purpose, without remarkable sedative effects. The administration of neuroleptics, particularly acepromazine, is still common practice to tranquilize pets in transit. Nevertheless, it should be emphasized that neuroleptics may impair normal balance, thus increasing the risk of injury, as well as causing air obstruction due to abnormal postures. For these reasons, among others, the International Air Transport Association discourages the use of medication, particularly neuroleptics, to control panic attacks.

On the other hand, acepromazine might be particularly beneficial in the sedation of dogs that are too fearful or aggressive to handle or restrain safely and effectively. Oral combinations with benzodiazepines might be effective prior to veterinary visits, grooming, or other potentially fear-evoking events.²⁷ However, intramuscular combinations of either acepromazine or dexmedetomidine plus a narcotic and midazolam are generally highly effective for most procedures (see [Chapter 23](#)).

Risperidone has been used in some European countries to treat recently developed sociopathies toward people. Neuroleptics have been utilized in stage 3 deprivation syndrome (deprivation depression associated with sleep disturbances and self-injurious behaviors), in separation anxiety when there are motor disturbances (pipamperone in combination with clomipramine), in some cases of primary dissocialization, in social phobias (thioridazine or fluphenazine), and in stage 2 sociopathies toward humans (in combination with cyproterone and carbamazepine) (see [Chapter 22](#)).²⁸

Benzodiazepines

Benzodiazepines can be considered for the treatment of any condition that may have an underlying component of fear or anxiety, including separation anxiety, noise phobias, and

some forms of feline inappropriate elimination. They potentiate the effects of GABA, an inhibitory neurotransmitter. This acts to mute the effects of glutamate, the excitatory neurotransmitter from which GABA is made.

Glutamate and GABA are, in fact, a system in balance where GABA controls glutamate, and vice versa. In general benzodiazepines cause decreased anxiety, hyperphagia, muscle relaxation, decreased locomotor activity, and varying degrees of sedation. Benzodiazepines act as mild sedatives at low doses, as antianxiety agents at moderate doses, and as hypnotics at high doses. They may also act as anticonvulsants. Studies of animal models of anxiety have shown that the inhibition related to fear and anxiety can lead to a decrease in eating, drinking, and exploratory behaviors, and an increase in avoidance or aggression, while treatment with benzodiazepines leads to disinhibition, resulting in increased exploration, resumption of appetite, and a decrease in avoidance and aggression.²⁹ However, in some instances, such as where the fear response is one of avoidance, disinhibition could lead to an increase in aggression. In humans and laboratory animals the aggression-heightening effect of benzodiazepines seems to be dose-dependent, with lower doses enhancing aggression. Some evidence from studies on laboratory rodents indicate that certain benzodiazepines such as oxazepam and clorazepate might be safer in terms of their potential aggression-heightening effect.³⁰

Benzodiazepines can cause paradoxical excitability, which can be particularly problematic in situations where a calming effect is desired and is also a concern if the drug is to be administered during periods when there is no owner supervision, such as in separation anxiety. In those situations it is advised before beginning the treatment to test the drug in the owner's presence. Benzodiazepines may cause a variable degree of anterograde amnesia, which is an inability to create new memories. Amnesic effects of benzodiazepines can have positive or negative consequences depending on how they are integrated in the overall treatment scheme.

In one study examining the effects of *diazepam* in dogs with behavior problems, it was very effective or somewhat effective in 67% of anxiety-related behavior cases.³¹ Upon discontinuation of diazepam, owners reported either lack of efficacy or adverse effects, ranging from sedation to increased appetite, ataxia, agitation, activity, and aggression. Owners reported greater success when using diazepam for fear of thunderstorms than for separation anxiety. When doses of 0.8 mg/kg were used, there were greater reports of increased activity.³¹ Therefore when side-effects are seen, dose adjustments should be considered or alternative benzodiazepines selected.

Benzodiazepines might be used on an as-needed basis for the treatment of situational anxiety such as with thunderstorms, fireworks, car rides, visits to veterinary clinics, or the anxiety associated with departures in dogs with separation anxiety. They reach peak effect shortly after each dose and can be used alone or in combination with other drugs on an as-needed basis.^{32,33}

Benzodiazepines might be useful to facilitate desensitization and counterconditioning in animals showing intense fear, since they decrease anxiety and increase appetite. However, since they can impair learning, the dose should be gradually reduced as the pet begins to show improvement.

The amnesic effects of benzodiazepines can be useful for unavoidable exposures to the stimuli causing fear or anxiety, for they might reduce the long-term impact of those negative experiences.

All of the benzodiazepines act as anxiolytic medications and have similar therapeutic effects. But onset of action, duration of effect, intensity of effects, and metabolism differ, so that a particular benzodiazepine might be more suited to a particular application.

In humans, oxazepam and lorazepam are considered short-acting benzodiazepines, alprazolam is intermediate-acting, and diazepam, chlorthalidopoxide, and clorazepate are longer-lasting. Clonazepam is also a long-acting benzodiazepine that is indicated for the control of seizures in humans. It may lead to less sedation than some other benzodiazepines. In general, clorazepate, clonazepam, and perhaps oxazepam might be preferable when a longer duration of action is required.

Benzodiazepines are absorbed unchanged from the gastrointestinal tract, with the exception of clorazepate, which is converted to its intermediate metabolite nordiazepam (desmethyldiazepam) in the gastrointestinal tract prior to its absorption. Most benzodiazepines, such as diazepam, are metabolized by the liver and some have active intermediate metabolites that may be more active than the parent compounds. The metabolites are then conjugated by the liver and excreted in the urine. For instance, nordiazepam, which in turn is converted to the active metabolite oxazepam, is an active metabolite of chlorthalidopoxide, diazepam, and clorazepate. Alprazolam and triazolam have short-lived metabolites with minimal activity. Diazepam and particularly its active metabolites have been reported to cause rare cases of hepatotoxicity in cats and for this reason is no longer considered the benzodiazepine of choice in that species.³⁴ Anorexia can be a sign that the cat is having a hepatic reaction and should be cause for immediate cessation of the drug. Oxazepam and lorazepam have no intermediate metabolites and therefore may be safer for the obese, elderly, or those with liver disease and have less chance of residual or cumulative effects.

In cats, diazepam has been used successfully for spraying, anxiety-motivated inappropriate elimination, anxieties, and fears (including fear aggression). It has also been used successfully to stimulate appetite, to control seizures, and to treat feline hyperesthesia. Diazepam may also decrease predation through its inhibitory effect on acetylcholine. Because of the relatively short half-life in dogs (3.2 hours compared with 5.5 hours in cats), as well as the short half-life of its active metabolite nordiazepam (3.6 hours in dogs compared with 21 hours in cats), its primary use in dogs is alone or in combination with SSRIs or TCAs as adjunct to desensitization programs for fears and fear aggression, and prior to fear- and anxiety-evoking events such as owner departures, thunderstorms, or fireworks.³⁵ However, with continued oral dosing of 1–2 mg/kg TID, steady-state plasma concentrations might be achieved.³⁶

Because of its short duration of action and high potency, *alprazolam* is most useful for acute fears and panic. In pets, it has been used successfully for some forms of fear- or anxiety-related aggression, as other benzodiazepines may lead to disinhibition and increased aggression. It may also

be useful for pets that wake up anxious at night, and in refractory cases of feline inappropriate elimination. At low doses, it may successfully reduce fear and aggression with less effect on motor function than diazepam.

Clonazepam and *clorazepate* may be useful where the chronic use of a benzodiazepine is needed for the treatment of generalized anxiety states in dogs and cats. Clonazepam has a slower onset of action and may be safer for pets with compromised hepatic function since it has no active intermediate metabolite. Peak concentrations are achieved in 1–3 hours. Clorazepate may have a longer duration of effect than other benzodiazepines, with peak duration of effect of up to 6 hours.

Oxazepam is an effective appetite stimulant for cats and provides a longer duration of action than diazepam. In people, oxazepam is a favored benzodiazepine in the elderly and in patients with impaired hepatic function.

Lorazepam provides more sustained release in people but has a slower onset of action. In dogs it has been reported to maintain therapeutic blood levels for 60–90 minutes at a dose of 0.2 mg/kg.³⁵ It has been used for the control of acute agitation and aggression in people and may be effective for an overly fearful victim cat in cases of intercat aggression. Intranasal administration also maintained plasma levels consistent with anticonvulsant activity in 3/6 dogs for at least 60 minutes.³⁷

Chlordiazepoxide has also been used for urine spraying in cats. Chlordiazepoxide combined with clonidine may be effective for stress-induced colitis.

Long-term use of benzodiazepines may lead to dependence. In humans, benzodiazepines also pose a risk of dependency and abuse; therefore, while drug use by pets can be responsibly controlled by the pet owner, veterinarians should exercise some caution in dispensing and monitoring of benzodiazepine use if they suspect that there might be a potential for human abuse. All benzodiazepines, particularly those of high potency, should be withdrawn slowly (e.g., 10–25% per week). This is especially true in patients administered benzodiazepines for the control of seizures, as status epilepticus may be precipitated if the drug is not tapered slowly. Behavior problems may recur when the drug is withdrawn. In one study, 91% of cases of inappropriate urination in cats recurred when the diazepam was discontinued.³⁸

Since some benzodiazepines have been associated with hepatic failure, liver function should be assessed prior to therapy and pets should be monitored closely throughout the course of therapy. Baseline screening with close attention to liver function and reassessment 3–5 days after onset is recommended.

Although drugs such as SSRIs and TCAs may be more appropriate for chronic anxiety situations, such as separation anxiety, shorter-acting drugs that do not require several weeks to reach a therapeutic state, such as benzodiazepines, may be better suited to anxieties of shorter duration, such as a boarding situation, thunderstorms, fireworks, or for a few days after a move or other changes in the household.

Combination therapy of benzodiazepines plus TCAs, SSRIs, propranolol, or phenothiazines has also been used occasionally in veterinary medicine (e.g., separation anxiety, thunderstorm phobias). In an open trial, alprazolam in

conjunction with clomipramine and behavior modification seems to be effective in controlling noise phobia in dogs.³² For immediate control of panic or phobic states, intranasal lorazepam or intranasal or intrarectal administration of diazepam may be an option for some owners where oral dosing is impractical and immediate effects are needed.^{37,39}

Hypnotics and sleep disorders

Some benzodiazepines, but also drugs from other pharmacological classes, such as cyproheptadine, diphenylhydramine, or trazodone, can be used to help re-establish a proper sleep schedule over the short term. In people, the primary use for hypnotic benzodiazepines such as flurazepam and triazolam is for the treatment of insomnia. Flurazepam has rapid absorption, a long half-life, and may sedate during the next day in people. At low doses it may not affect REM sleep in humans. Triazolam has slower absorption and a very short half-life. When used for pets that wake during the night, flurazepam may be preferable if pets wake too early on triazolam or alprazolam. Triazolam has also been reported to be effective in some cases of aggression in cats.

Benzodiazepines marketed for anxiety can also be used for sleep induction. Clorazepate, diazepam, clordiazepoxide, and clonazepam resemble flurazepam but may have a faster onset of action and shorter duration. Clonazepam has also been reported to be effective for some REM sleep movement disorders.⁴⁰ Oxazepam may help to sustain sleep but is not an effective sleep inducer. Sedating antihistamines such as diphenylhydramine and cyproheptadine may also induce sleep. Similarly, amitriptyline and doxepin may be effective. Trazodone may increase sleep time and decrease nighttime waking, but, unlike TCAs, may not increase stage 4 sleep. Imipramine may also be effective, particularly for nighttime enuresis. Natural therapies such as valerian, kava, and melatonin may also be useful for calming pets at night and maintaining sleep (see [Chapter 9](#)).

REM sleep behavior disorder events were reduced in severity and frequency in 78% of dogs treated with 40 mg/kg/day oral potassium bromide.⁴¹ REM sleep behavior disorders may be associated with panic, howling, barking, growling, chewing, aggression, or violent limb movements during sleep, either at night or during daytime naps. While problems have been reported to arise anywhere from 8 weeks to over 7 years of age, over 60% of dogs were 1 year or less.⁴¹ Potassium bromide, at a dose of 40 mg/kg per day, is recommended for treatment of REM sleep behavior disorders and can be increased in 3–4 weeks to maintain serum potassium bromide levels at 1–3 mg/dL.⁴¹

Zolpidem (USA) and zopiclone (Canada) are nonbenzodiazepine hypnotics. Although they may also be useful for sleep induction, dose and duration for dogs and cats have not been established. In a recent study zolpidem administered at doses ranging from 0.15 to 0.5 mg/kg had no appreciable clinical effects at the lower dose and paradoxical CNS stimulation of 1 hour followed by transient sedation.⁴²

In humans, combinations of hypnotics or trazodone combined with mirtazapine have been used for insomnia.

Since medical problems (see [Chapter 6](#)) and cognitive dysfunction (see [Chapter 13](#)) might cause or contribute to

night waking and altered sleep–wake cycles, these should be ruled out first.

Anticonvulsants

The most commonly used anticonvulsant in veterinary medicine is phenobarbital, although potassium bromide has gained increased popularity. Anticonvulsants have applications in clinical veterinary behavior, particularly in cases where a forebrain lesion might be responsible for the behavioral signs.

Primary behavior disorders and behavior pathology such as compulsive disorders may be difficult to differentiate from seizure disorders. In humans, temporary lobe epilepsy or partial (focal) seizures of the temporal lobe can have behavioral signs, including mood alterations, bouts of aggression, self-traumatic behavior, and visual, auditory, gustatory, olfactory, and somatic hallucinations which can be associated with ictal, postictal, or even interictal stages. There also may be comorbidity between seizures and behavioral disorders.^{42,43} While partial complex seizures may have altered levels of consciousness, simple partial seizures are not typically associated with altered consciousness. Differentiating a medical from a behavioral cause can be particularly challenging when pets present with air snapping, tail chasing, pouncing, fixed staring, star gazing, head shaking, spinning, or checking. Spinning in bull terriers, tremors of boxers and bulldogs, and hyperesthesia in cats are just a few of the presentations that could have a neurological or behavioral cause, e.g., compulsive disorders⁴⁴ (see [Chapter 11](#)). Partial seizures should be considered in dogs and cats when behavior problems are episodic, extreme, dysfunctional, or have identifiable pre- or postevent signs. If a seizure disorder cannot be ruled out, a therapeutic response trial with phenobarbital might be an option. Gabapentin, carbamazepine, clonazepam, or levetiracetam and potassium bromide in dogs might also be considered alone or in combination with other seizure medications.

Phenobarbital and other barbiturates were used in the past as antianxiety agents in both humans and animals. In fact, a combination of phenobarbital and propranolol has previously been suggested for the treatment of noise phobias.⁴⁵ However, for the most part benzodiazepines have replaced barbiturates for the treatment of anxiety-related disorders. On the other hand, some benzodiazepines such as clonazepam or lorazepam may be useful as adjunctive therapy in the control of behavioral signs associated with seizures. Although the elimination half-life is approximately 1–2 hours at low doses, with higher doses and long-term therapy, seizure control might be maintained with bid to tid therapy. *Clonazepam* has a slower onset of action and may be safer for pets with compromised hepatic function since it has no active intermediate metabolite. Peak concentrations are achieved in 1–3 hours. *Lorazepam* has a more rapid onset of action and has not been associated with the anticonvulsant tolerance that may be seen with clonazepam. These drugs can be used concurrently with potassium bromide or phenobarbital. However, phenobarbital is a major P450 enzyme inducer; therefore many drugs such as benzodiazepines, glucocorticoids, TCAs, and propranolol may be metabolized more rapidly, necessitating the use of higher doses of these drugs to achieve clinical effect. Due to the possibility of

physical dependence, withdrawal should be gradual. Signs of abrupt withdrawal might include “wet dog shakes,” increased temperature, listlessness, and seizures.

Anticonvulsants such as gabapentin, pregabalin, and carbamazepine might also be considered for neuropathic pain. *Gabapentin* is structurally similar to GABA, but, unlike GABA, it has been formulated to cross the blood–brain barrier and does not appear to have any effect on GABA receptors. One suggested mode of action is enhancement of neuronal GABA synthesis. In addition to its anticonvulsant effect, gabapentin might be useful in behavior therapy for the treatment of generalized anxiety disorders, impulsivity, mood disorders, phobias, panic disorder, impulse control disorders, and as adjunctive therapy in compulsive disorders. Gabapentin is not metabolized in humans but 40% is metabolized to *N*-methyl gabapentin in the liver in dogs. The parent compound and intermediate metabolite are excreted in the kidneys so dose adjustments might be needed in renal patients. The mean elimination half-life in dogs is 2–4 hours and the time to achieve steady-state concentration is less than a day. Since self-mutilatory disorders, hyperesthesia, and interstitial cystitis in cats may have a pain component, gabapentin may be an option for these conditions. Pregabalin may also be an effective adjunctive medication for seizure control and neuropathic pain but is often a more costly option.⁴⁶

Carbamazepine is a tricyclic compound, similar to imipramine in structure, that has been used for adjunctive anticonvulsant therapy and for neuropathic pain, specifically trigeminal neuritis in humans. Carbamazepine may also act as a mood stabilizer and antidepressant. In humans it has been used for epilepsy-related aggression and aggression with agitation, anxiety, and irritability, and has been used in dogs with irritable and explosive types of aggression, compulsive behaviors, and for behavior changes associated with seizures.⁴⁷ It has been used alone or in combination with drugs such as fluoxetine. In animals, carbamazepine is slightly sedating, mildly anticholinergic, and does not cause significant muscle relaxation. Carbamazepine has been proposed by behaviorists following the so-called Pageat (French) approach to behavioral medicine (see [Chapter 22](#)), mainly as a mood stabilizer to treat canine aggression associated with social deprivation syndrome in excitable, irritable, and aggressive forms of sociopathies toward people or other dogs. In cats, carbamazepine has been found to reduce some forms of fear-induced aggression, and may make individual cats more affectionate toward people.⁴⁸ However, as with other drugs that reduce the inhibitory effects of fear, an increase in aggression toward other cats within the home is a potential adverse effect. Side-effects in people include ataxia, clonic/tonic convulsions, gastrointestinal upset, and locomotor difficulties. The drug is contraindicated in patients with known renal, hepatic, cardiovascular, or hematological disorders, and should not be used in pets kept for reproductive purposes. It has a short elimination half-life and dosing can be further complicated by the fact that in humans the drug induces CYP3A4, which metabolizes carbamazepine itself (as well as other drugs metabolized by CYP3A4); therefore higher doses may be required to maintain effect over time. In humans, there is a risk for agranulocytosis and aplastic anemia, so that regular blood monitoring is recommended.

Levetiracetam is an antiepileptic drug that was the first drug in humans approved for partial seizures and is also used for other psychiatric disorders, including anxiety, stress, panic, mood disorders, Tourette's, and behavioral signs such as aggression that might be associated with seizures.^{49,50}

Huperzine A (dose approximately 1 µg/kg bid to tid), a compound isolated from Chinese club moss with NMDA receptor-blocking activity, acetylcholinesterase-inhibiting activity, and anticonvulsant properties, has been used with limited success in a dog with star gazing, fly snapping, licking, chewing, and anxiety, which was diagnosed as a partial seizure.⁵¹

Adrenergic receptor agonists and antagonists

Beta-adrenergic receptor antagonists

Since fear leads to the release of the neurotransmitter norepinephrine, beta-blockers such as *propranolol* have been used successfully to treat some forms of anxiety. By blocking beta-adrenergic activity, the physical symptoms of anxiety (rapid heart rate, increased respiratory rate, muscle tremors, palpitations, sweating, trembling, gastrointestinal upset) are decreased. Without these signals of fear, the fear response is diminished but there may be only mild improvement in psychological signs. By reducing tone in muscle spindles, beta-blockers might reduce effects on the reticular activating system that lead to reactivity and vigilance. In addition, propranolol might act centrally to increase 5HT release. Although they are seldom effective for generalized anxiety or panic situations, beta-blockers have been used successfully in people with situational or performance anxiety (e.g., stage fright), sometimes referred to as "fight or flight" situations. In veterinary medicine, propranolol has been used in combination with buspirone, SSRIs, TCAs, phenobarbital, benzodiazepines, and selegiline in dogs and cats for the treatment of fears, anxiety, and phobias (especially when there are strong somatic signs).³³ Beta-blockers are contraindicated in pets with bradycardia, congestive heart failure, diabetes, or pulmonary diseases, including asthma.

Pindolol is a beta-adrenoreceptor antagonist. As with propranolol, anxiety may be reduced by blocking some of the autonomic signs of fear and anxiety. However, since pindolol has more effect on serotonin receptors, it may also have a central effect on aggression. In addition, by blocking presynaptic autoreceptors, the initial downregulation associated with reuptake inhibitors may be prevented. This results in augmentation and acceleration of the antidepressant effect of the SSRIs and TCAs. Studies in humans have shown a faster SSRI response when combining pindolol with an SSRI (especially paroxetine) compared to the SSRI alone.⁵² Some studies have also demonstrated an improved response to depression with pindolol plus fluoxetine versus fluoxetine alone.⁵³ Potential side-effects of pindolol are panting, increased anxiety, and urinary incontinence.

Alpha-2 adrenergic receptor agonists

Clonidine is a selective alpha-2 agonist that blocks norepinephrine release on presynaptic neurons in the locus ceruleus, reducing sympathetic outflow from the brain. Although originally developed as an antihypertensive agent, it has

been used in both human and veterinary behavior since it reduces sympathetic outflow from the brain, thereby blocking autonomic responses to anxiety (fight or flight). It may also offer centrally acting analgesic effects by blocking pain signal transmission to the brain.³⁵ In human psychiatry it has been used for the treatment of hypervigilance, ADHD, posttraumatic stress disorder, and impulsivity. Clonidine administration has been shown to inhibit firing of the locus ceruleus noradrenergic neurons in cats. According to the results of an open-label trial it has been used in conjunction with serotonin reuptake inhibitors and/or buspirone for fear and territorial aggression and for anxiety disorders such as separation anxiety, noise and storm phobias, and nocturnal barking that have been unresponsive to other therapeutic strategies.⁵⁴ It is generally dosed approximately 1.5–2 hours prior to an event up to twice daily. It has also been used as adjunctive therapy in the treatment of inflammatory bowel disease in dogs and cats. Other than hypotension, at higher doses it can cause sedation and has been reported to cause sleep disturbances, excitation, and decreased concentration in humans. Clonidine should be used cautiously in pets with cardiac disease and medications that might increase norepinephrine levels.

Alpha-adrenergics

Alpha-adrenergics (sympathetic agonists) decrease incontinence by increasing urethral sphincter tone in cases of urethral incompetence. Once the pet regains urethral competence, the amount and frequency of administration should be decreased gradually to the lowest effective dose. Some pets become refractory to long-term use so that increased doses may ultimately be required. Oral *phenylpropanolamine* once daily or ephedrine twice daily may be effective for control of urethral sphincter incompetence.⁵⁵ However, while phenylpropanolamine has been removed from human distribution due to potential for hemorrhagic strokes, it is licensed for veterinary use and may be associated with fewer cardiovascular effects than ephedrine. Phenylpropanolamine may also be helpful for excitement and conflict urination (see Chapter 18). Side-effects in pets might include bronchodilation, restlessness, hypertension, excitability, anxiety, panting, anorexia, irritability, tremors, and cardiac arrhythmias. These drugs are contraindicated in patients with glaucoma, prostatic hypertrophy, hyperthyroidism, diabetes mellitus, cardiovascular disorders, or hypertension. If used in dogs with cardiovascular disease, blood pressure should be monitored closely. Antidepressants with anticholinergic and alpha-adrenergic effects, such as imipramine, may also be effective in the treatment of urethral incompetence and as an adjunct to treatment of conflict and excitement urination.

Azapirones

The only azapirone applicable to veterinary behavioral use is *buspirone*, a selective anxiolytic that produces minimal side-effects. It is a partial serotonin (5HT_{1A/B}) receptor agonist, serving to regulate the neurotransmission of serotonin.³⁸ Buspirone is not indicated for the treatment of panic disorders and has not proven to be particularly effective in veterinary practice for pets with intense fears, anxiety,

phobias, compulsive disorders or canine aggression. In general it is considered a mild anxiolytic, which may “take the edge off anxiety.” Buspirone may be useful in reducing fear and building the confidence of an overly fearful pet, in its relationship with people or other pets. As with other anxiolytics, treatment with buspirone can lead to disinhibition and an increase in aggression. In one study, it was found to be effective in reducing feline urine marking in over 50% of cases, with less recurrence after withdrawal than drugs such as diazepam.³⁸ It may also be useful in conjunction with SSRIs or clomipramine for fears, phobias, and compulsive disorder, perhaps as a means of increasing the serotonin pool; however caution should be taken to monitor for signs of serotonin toxicity. Buspirone might also be combined with benzodiazepines for the treatment of some anxiety disorders. Buspirone produces no significant sedation or muscle relaxation and does not impair motor function or cognition, so that it is a good first choice for mild chronic fears and anxieties. Since it does not lead to dependence, it is more likely that a pet can be withdrawn from buspirone, compared to a benzodiazepine, without recurrence of the problem. Although some effect may be seen after a single treatment (e.g., pretravel) with higher doses of 2 mg/kg, it is more commonly dispensed for ongoing use at doses of 0.5–1 mg/kg bid and several weeks might be needed to achieve clinical efficacy. Recent reports indicate that it may be effective at reducing motion sickness in cats.⁵⁶ Its drawbacks are cost, and the need for twice-daily dosing in cats.

Antihistamines

Antihistamines may be useful for the treatment of pruritus, self-trauma, and anxiety. Those antihistamines that have sedative CNS effects (hydroxyzine, chlorpheniramine, diphenhydramine, cetirizine, trimeprazine) may also be useful in situations of mild anxiety or overactivity, or to help induce sleep. However, compared to acepromazine, diphenhydramine did not cause clinical appreciable sedation in healthy dogs.⁵⁷ Anxiety associated with car rides, excessive vocalization, and undesirable nighttime activities are conditions that may respond to antihistamine therapy. They may also be useful postoperatively and for anxiety associated with pruritus. TCAs such as doxepin and amitriptyline may also have potent antihistaminic effects and may therefore be more suited for anxiety and self-trauma. Since antihistamines are anticholinergic, pet owners should be warned that they may cause a dry mouth and constipation, and are contraindicated in patients with glaucoma, urine retention, or hyperthyroidism. Cyproheptadine, an antihistamine with antiserotonergic effects, may also be an effective appetite stimulant in cats and dogs and may be useful for inducing sleep. It has also been used with variable success to treat urine spraying in cats.⁵⁸

Hormonal therapy

Synthetic *progestins* have been used for many years to treat feline inappropriate urination and some forms of anxiety and aggression. They are antiandrogenic, and cause an increase in appetite and nonspecific depression of the CNS. This latter effect explains why progestins cannot be used to assess the potential effects of castration on behavior. Because

of their effects on the endocrine system, numerous unacceptable side-effects may result. High doses or long-term use may lead to diabetes mellitus, adrenocortical suppression, bone marrow suppression, acromegaly, endometrial hyperplasia, pyometra, and mammary hyperplasia and carcinomas. Behavioral use of progestins should be avoided in intact females and, whenever possible, other drugs should be used first. When all else fails, progestins may be an effective treatment for controlling aggression and for cases of feline spraying, anxiety-motivated inappropriate urination, and psychogenic alopecia that are refractory to antianxiety agents. Progestins may also be the drug of choice for sexually dimorphic behaviors that do not respond to castration or when castration is contraindicated.

Since the presence of male hormones can lead to an increase in sexually dimorphic behaviors (such as mounting, mating, masturbation, roaming, urine marking, and perhaps some forms of aggression), there is some question as to whether drugs that might reduce the effects of androgens could also have an effect on behavior. *Finasteride* inhibits the conversion of testosterone into dihydrotestosterone (DHT) so that both intraprostatic and circulating DHT levels are reduced. However, in clinical trials in males treated with finasteride for benign prostatic hypertrophy, there was little or no decline in libido and in canine studies there was no effect on serum testosterone.⁵⁹ *Delmadinone* is an androgen antagonist that leads to suppression of secretory activity of the prostate gland but does not lead to lower serum DHT levels. Since neither of these drugs appears to lower circulating testosterone levels they are not likely to have any significant effect on reduction of androgen-influenced behaviors. *Cyproterone acetate* blocks the binding of DHT to the receptors in the prostate and decreases the production of luteinizing hormone so that testicular testosterone production is inhibited. It has been used for some androgen-influenced behavior problems and as a test of the effect that castration might achieve in a male dog. A dose of 3–5 mg/kg has been suggested. *Leuprolide acetate* and *goserelin* are luteinizing hormone-releasing hormone analogs which, after an initial short-term hormonal increase, lead to a suppression of ovarian and testicular steroid production (and likely adrenal sex steroid production) with chronic use. In effect, testosterone production is reduced to castrate levels so that these products may give a more true assessment of the effects of castration. Leuprolide has been used to treat adrenal disease in ferrets at a dose of 100 µg i.m. per month. A dose of 3.6 mg of depot goserelin has been shown to drastically reduce the blood levels of estradiol in females and testosterone in males after 3 weeks (within the menopausal and castrate levels respectively), and the duration of effect was 3–5 weeks.⁶⁰ In female dogs with mammary cancer, a dose of 60 µg/kg of depot goserelin every 21 days for 12 months decreased estradiol and progesterone levels by blocking the hypothalamic–pituitary–ovary axis, with no apparent toxic effects.⁶¹ *Deslorelin* is also a gonadotropin-releasing hormone agonist licensed in Europe in the form of a subcutaneous implant for the induction of temporary infertility in healthy, entire, sexually mature male dogs. An initial rebound effect in testosterone production is observed followed by a down-regulation of pituitary gonadotropin-releasing hormone receptors, leading to a loss of gonadal activity. Deslorelin has proven to be an effective alternative to surgical castration in

both dogs and cats. Sexually dimorphic behaviors, such as mounting and urine marking, are initially unaffected or even increased but they progressively show a significant reduction after the first weeks of treatment.⁶²

Diethylstilbestrol is used for the treatment of estrogen-responsive incontinence in spayed female dogs by increasing sphincter tone. Estrogens, however, can be toxic to the bone marrow and cause blood dyscrasias so the lowest effective dose should be utilized and complete blood counts should be monitored regularly. Incontinence in neutered male dogs has been successfully treated with repository parenteral treatment of *testosterone propionate*, since most oral testosterone is rapidly broken down by the liver. The prostate should be regularly assessed in dogs undergoing testosterone therapy. Potential side-effects are the development, aggravation, or recurrence of sexually dimorphic male behaviors. Testosterone and estrogen depletion may also be related to cognitive decline and possibly mood disorders (see Chapter 13). It is as yet undetermined whether hormone replacement therapy might help to prevent or slow the progress of cognitive decline, or would lead to an improvement of clinical signs. However, in old dogs with cognitive decline, estrogen-treated females made significantly fewer errors in size-reversal learning tasks but made more errors in spatial memory tasks.

Dopamine agonists

Dopamine agonists such as *bromocriptine* directly stimulate dopaminergic postsynaptic receptors in the brain, which inhibits prolactin release from the anterior pituitary. In cats, bromocriptine has been reported to reduce urine spraying. Side-effects include increased affection, prolapsed nictitating membranes, and inappetence for 24–48 hours. Oral tablets are available but exact dose rates have not been determined. It is thought that steady-state plasma levels are reached in 10 days and that the medication should be given twice daily for 4–8 weeks. In humans, the drug may cause dizziness, hypotension, and nausea (so should be taken with food), and transient elevations in alanine aminotransferase, creatine phosphokinase, blood urea nitrogen, aspartate aminotransferase, and serum alkaline phosphatase. Bromocriptine may also be useful in the treatment of false pregnancy in dogs and in occasional cases of pituitary-dependent hyperadrenocorticism. Vomiting, diarrhea, hypotension (especially with the first dose), and behavior changes such as sedation and fatigue have been observed in dogs.

Cabergoline, which is not presently available in North America, is under investigation for the treatment of Parkinson's disease and prolactinomas of the pituitary gland in humans and may enhance sexual activity. It is a D2 receptor agonist that leads to decreased prolactin levels. It is approved for veterinary use in Europe for the control of the physical and behavioral signs of pseudopregnancy. It has been shown to reduce the signs of false pregnancy in dogs at a dose of 5 µg/kg daily for 5 days in the food with a termination of the anestrus stage and an earlier return to proestrus.⁶³

Opiate antagonists and agonists

Since *opioids* such as *morphine* have been shown to reduce social need and social solicitation, there may be theoretical indications for their use in socially deprived individuals and

those with separation anxiety. Conversely, *naloxone* increases solicitive behavior, including tail wagging and face licking.²¹ Opiate peptides are released during stress and conflict. The activation of narcotic receptors may lead to some stereotypic behaviors. In addition, opioids activate the dopamine system, which may also contribute to compulsive or stereotypic behaviors. Release of opioids may further serve to reinforce these behaviors. Endogenous opioids may also induce analgesia, reducing the pain that might otherwise inhibit self-mutilation. Thus, opiate (endorphin) receptor blockers may be effective in reducing some compulsive stereotypic behaviors, especially those that have been ongoing for a relatively short time. The resultant increase in pain perception may further reduce self-mutilation. Narcotic antagonists have been variably effective in the treatment of a number of compulsive and stereotypic disorders, such as self-mutilation, acral lick dermatitis, tail chasing, and flank sucking in Doberman pinschers.^{64,65} *Naltrexone* can be given orally, but most other opiate antagonists or mixed agonists–antagonists are only available in injectable form. A trial with naltrexone would indicate its effectiveness; however, the drug may not be practical for long-term therapy because of its expense. It has also been found that supplying an exogenous source of opioids, such as *hydrocodone*, may be successful in the treatment of some self-mutilatory behaviors such as acral lick dermatitis.⁶⁶

Lithium salts

Lithium salts (lithium carbonate and lithium citrate) are used in the treatment of bipolar disorders and depression and explosive behavior disorders, including aggression, in people. Lithium exerts a mood-stabilizing effect through many putative mechanisms of action, including among others direct cell membrane stabilization, effects on neurotransmitters like dopamine and serotonin through modifications in G-proteins and modulation of glutamate receptors.

Lithium has been utilized for some forms of unpredictable severe aggression in dogs.⁶⁷ In the Pageat (French) approach to behavioral medicine (see Chapter 22), lithium has been used to treat a dysthymia of Cocker spaniels associated with unipolar and bipolar disorders and possessive aggression. Lithium may be useful in combination with benzodiazepines or TCAs when these drugs alone have been unsuccessful in the treatment of stereotypic or compulsive behaviors. If psychotic-type disorders truly exist in companion animals, then lithium may be an appropriate treatment.

Lithium is highly toxic and has a narrow window of efficacy. Potential side-effects in humans include gastrointestinal upset, polyuria, weight gain, hypothyroidism, tremors, diabetes insipidus, and renal failure. Neutrophilia, lymphopenia, and isosthenuria have been reported in dogs. In cats and dogs, toxic signs include diarrhea, vomiting, hypotension, respiratory depression, and CNS effects, including depression, muscle tremors, seizures, or coma. It therefore requires careful monitoring. An electrocardiogram, blood profile, urinalysis, and thyroid level should be assessed prior to treatment and the drug should be avoided in patients with renal, cardiac, or thyroid disease. Therapeutic blood levels should be monitored and maintained in the range of 0.8–1.2 mEq/L. Lithium toxicity can occur in

humans if blood levels reach greater than 1.5 mEq/L, so levels should be maintained below this value if lithium is utilized in dogs and cats. Blood levels of lithium, kidney function, thyroid function, complete blood count, and electrocardiograms should be monitored throughout the course of therapy.

More than 50 years after lithium was introduced, it is still used to treat different psychiatric conditions. Nevertheless, the systematic use of this drug in veterinary medicine remains unexplored.

Monoamine oxidase inhibitors (MAOIs)

MAO is an enzyme that metabolizes norepinephrine, dopamine, and serotonin. MAOIs (e.g., phenelzine, isocarboxazid, tranylcypromine) inhibit both MAO A and MAO B and are irreversible in their actions. Since MAOIs prevent the breakdown of epinephrine, norepinephrine, and serotonin, they cause elevations of these monoamines for the treatment of depression, social phobias, anxiety, eating and panic disorders in humans. They are less anticholinergic and less sedating than TCAs, but have the potential for greater side-effects and may interact with a number of drugs that enhance the serotonin system (such as SSRIs and some TCAs), as well as foods that are rich in tyramine (such as cheese and wine) to precipitate a hypertensive crisis. Tyramine is normally inactivated by MAO in the gut. However, when nonselective irreversible MAOIs are administered, tyramine may not be inactivated. This may lead to an increase in norepinephrine release, leading to vasoconstriction and an increase in blood pressure. Adverse reactions include CNS stimulation, hepatotoxicity, dizziness, hypertension, or hypotension, dry mouth, blurred vision, and constipation. A variety of nutraceuticals can also contain or influence MAOIs, including resveratrol, goldenseal (berberine), turmeric (curcumin), ginkgo biloba, and perhaps St. John's wort (*Hypericum perforatum*).

As with other antidepressants, a therapeutic effect may not be achieved for up to 4 weeks. Newer selective reversible inhibitors of MAO are far less likely to precipitate a hypertensive crisis and may therefore be a safer and more practical treatment option. However, they can lead to insomnia at night and daytime lethargy. Most MAOIs nonselectively inhibit both MAO A and B, and have few animal applications.

The drug *selegiline* (also known as L-deprenyl) selectively inhibits MAO B in the dog at therapeutic levels. Although no absolute increase in brain dopamine levels has been demonstrated in the dog, it may enhance dopamine transmission by inhibiting dopamine reuptake and by increasing levels of phenylethylamine (which is a facilitator of dopamine activity). Selegiline may also enhance the release of norepinephrine.⁶⁸ Selegiline also activates superoxide dismutase (which is elevated in the dog after selegiline therapy) and catalase, two enzymes which are responsible for removing free radicals. It may itself be a potent free radical scavenger. Because free radicals cause cell injury and may contribute to brain pathology and signs of aging, it has been hypothesized that selegiline decreases nerve damage and degeneration. Selegiline also exhibits "rescue" of CNS and peripheral neurons damaged by trauma or neurotoxins. In fact, pretreatment with selegiline has been shown to prevent the

damage caused by dopaminergic, serotonergic, and cholinergic toxins.

In both laboratory studies and field trials, selegiline has been found to improve cognitive function in aging dogs, and may be useful in the treatment of disrupted sleep-wake cycles, indifference to the environment, decreased responsiveness to commands, decreased attentiveness and activity, weakness or stiffness, and geriatric-onset housesoiling with no concurrent organic disease. Selegiline may also be effective in the treatment of some forms of pituitary-dependent hyperadrenocorticism, which may result from hypothalamic dopamine depletion, although its effects are inconsistent and variable.⁶⁹ It may also be effective in suppressing cataplexy in cases of canine narcolepsy. Selegiline is licensed in North America for the treatment of canine cognitive dysfunction and pituitary-dependent hyperadrenocorticism. There is also anecdotal evidence of improvement of signs of cognitive dysfunction in cats with selegiline and one small study found no toxicity in cats up to 10 mg/kg.⁷⁰ Additional details on selegiline and its application for geriatric behavior problems are discussed in [Chapter 13](#).

In some European countries selegiline is licensed for the treatment of emotional disorders, as diagnosed in part by the EDED scale, which measures the combined effects of internal factors and response to external stimuli (see form 22.2, client form #17, printable version available online). Improvement has been reported in feeding, drinking, and sleeping disorders, physical signs such as tachycardia, diarrhea, and acral lick dermatitis, and to a lesser extent, learned and exploratory behavior. Syndromes based on the Pageat (French) diagnostic criteria that might be improved include the hypersensitivity-hyperactivity disorder, generalized phobic states, situational anxieties, separation-related disorders, and emotional disorders with components of fear aggression, separation, and overattachment problems. Regarding generalized phobia, selegiline could be effective for the treatment of fearful dogs, particularly those showing a strong behavioral inhibition. Selegiline may also improve incentive learning, decrease the effects of distraction and improve exploration.⁷¹ To date, there have been no published studies on the efficacy of selegiline in geriatric cats, although there have been reports of its efficacy for cognitive dysfunction and for emotional disorders in cats.⁷² Signs of cognitive dysfunction that might be improved include disorientation, increased anxiety, decreased responsiveness to owners and other stimuli, decreased nocturnal activity and vocalization, and decreased grooming and appetite. It has also been advocated by European behaviorists for the treatment of emotional disorders in cats, including productive signs (such as aggression, insomnia, and bulimia) and deficit signs (such as anorexia and increased sleep). Improvement has been reported in cats with territorial aggression, fear or fear aggression, reduced appetite, compulsive licking, night waking, housesoiling and spraying, excessive vocalization, and overactivity. There was little effect on hyperattachment or predatory aggression, and no side-effects were noted.⁷³

In healthy laboratory dogs, spontaneous behavior was unaffected by once-daily oral doses below 3 mg/kg, while at higher doses there was stereotypical responding characterized by increased locomotion and decreased exploratory behavior (sniffing). These behavioral effects were thought to be due to increased levels of phenylethylamine resulting

from inhibition of MAO B and/or dopaminergic enhancement by L-amphetamine metabolites of selegiline. It is important to note that the amphetamine that is a metabolite of selegiline is L-amphetamine and not D-amphetamine (which is a much more potent inducer of stereotypy). Gastrointestinal upset is occasionally seen, but usually improves when the drug is discontinued for a few days or may be avoided by using a lower starting dose. Hyperactivity and restlessness have also occasionally been reported. Toxicity has been reported on rare occasions in humans when selegiline is used concurrently with antidepressants, ephedrine, phenylpropanolamine, narcotics, or other MAOIs (including amitraz). Therefore, these combinations should also be avoided in dogs.

CNS stimulants

In some cases of overactivity disorders, learning deficits, and aggression in dogs, stimulants may have a paradoxical calming effect, in much the same way as they do for attention deficit disorders (ADDs) in humans. Of course, these stimulants would generally have an activating effect and are therefore contraindicated in dogs that are displaying overactivity or aggression from other causes. Stimulants enhance the release of dopamine and block dopamine and norepinephrine reuptake. This might then help to enhance inhibitory output from the frontal lobe to improve concentration and impulse control and decrease motor activity. Occasionally the less serotonergic antidepressants such as the TCAs or selegiline may also be useful in cases of ADHD. Most cases of hyperactivity are not due to physiological disorders. In humans, ADD may or may not be associated with hyperactivity (ADHD). ADDs in humans are associated with lack of impulse control, overactivity, and lack of attention, which interferes with ability to learn. Hyperkinetic dogs have been reported to exhibit overactivity (barking, chewing, pacing), tachycardia, panting, salivation, lack of trainability, aggression, and failure to calm down in neutral environments.⁷⁴ However, it has been speculated that dogs without hyperactivity that show signs of repetitive behavior, anxiety, aggression, poor learning or inattention, and perhaps gastrointestinal signs might also have ADD.

The diagnosis of hyperkinesis may be made by administering 0.2–0.5 mg/kg *dextroamphetamine* orally and then observing the dog every 30 minutes for 1–2 hours to determine if the dog's heart or respiratory rate decreases or the dog becomes calmer.⁷⁴ Alternatively *methylphenidate* can be prescribed for 3 days at 0.5 mg/kg in the morning and early afternoon. Target behaviors (repetitive behaviors, aggression, anxiety, overactivity) and somatic signs (respiratory and cardiac rates, salivation) should be assessed to determine if there is any significant improvement. If there is no improvement the dose can be increased by 0.25 mg/kg bid every 3 days to assess efficacy, to a maximum dose of 2 mg/kg bid.⁷⁵ However if there is aggravation in the condition at any dose the drug should be considered ineffective. In one European trial of dogs with hypersensitivity–hyperactivity disorders (see [Chapter 22](#)), about 55% of the dogs improved with methylphenidate therapy. Some of the dogs improved on fluvoxamine, selegiline, or sertraline therapy. CNS stimulants might also be indicated for narcolepsy.

Antidepressants

This category includes the TCAs and the SSRIs. The main pharmacological action of these psychotropic drugs is on serotonin pathways. Antidepressants may have a number of applications in pet behavior therapy. One primary indication is for regulation of the behavior sequence. These drugs may help the pet gain control of the initiation (beginning phase), termination, and intensity of the behavior. Phobias, generalized and chronic anxiety disorders, separation anxiety, panic, explosive or impulsive forms of aggression, compulsive disorders, painful disorders (such as idiopathic cystitis or self-traumatic disorders), and urine marking are just a few of the more commonly used applications where antidepressants might be considered alone or in combination with other therapeutic agents. For generalized and recurrent fears and anxieties, antidepressants may be preferable to anxiolytics since they are nonaddicting, less sedating, and are unlikely to affect learning or training. However, for the immediate control of anxiety, phobias, and panic, benzodiazepines such as alprazolam, diazepam, or clonazepam may also be needed. These drugs could also be used concurrently or on an as-needed basis during antidepressant therapy. Antidepressants cause little or no sedation and are unlikely to inhibit learning or memory, so they do not negatively interfere with behavior modification techniques. They might help to control anxiety and panic and may decrease the intensity of outbursts. Clomipramine and fluoxetine have been extensively used in dogs for anxiety disorders, including separation anxiety, compulsive disorders and phobias, and for compulsive disorders and urine marking in cats. SSRIs such as fluoxetine may also be indicated as an adjunct for treatment of some forms of aggression, including those with anxiety and impulse dyscontrol.

While antidepressants reach peak plasma levels within hours, this does not reflect their therapeutic effect since over time reuptake inhibition may induce changes in the expression of receptors, including downregulation of postsynaptic receptors. Therefore, while effects may be seen within the first week, at least 4 weeks of therapy is generally recommended to assess therapeutic effects fully.⁷⁶ The behavioral effects of chronic administration of antidepressants may lead to stimulation of neurogenesis in the hippocampus.⁷⁷ Side-effects may include gastrointestinal signs, inappetence, lethargy, paradoxical agitation, and neurological signs such as tremors or seizures. However, because antidepressants affect neurotransmitters in slightly different ways, there is some variability in indications and side-effects between antidepressants ([Table 8.2](#)).

Tricyclic antidepressants

The primary mechanism of action of TCAs such as clomipramine and amitriptyline is to block the reuptake of serotonin and, to a lesser extent, norepinephrine. The degree of serotonin and norepinephrine reuptake blockade, as well as anticholinergic, antihistaminic, and alpha-adrenergic effects, varies between TCAs and account for differences in TCA effects and side-effects. TCAs are contraindicated with glaucoma and cardiac disease, or where urine retention is a concern. Most TCAs are well absorbed from the gastrointestinal tract and metabolized by the liver to an active intermediate metabolite before excretion through the kidneys.

Table 8.2 Comparative effects of antidepressants

Most anticholinergic	Moderately anticholinergic	Least anticholinergic
Amitriptyline,* imipramine, doxepin	Clomipramine, paroxetine nortriptyline, protriptyline	Fluoxetine, fluvoxamine, sertraline, citalopram
Most hypotensive	Moderately hypotensive	Least hypotensive
Imipramine,* amitriptyline	Clomipramine, doxepin, protriptyline	Nortriptyline, fluoxetine, fluvoxamine, sertraline, citalopram, paroxetine
Most sedating	Moderately sedating	Least sedating
Doxepin, amitriptyline	Imipramine, clomipramine, nortriptyline, paroxetine, fluvoxamine	Protriptyline, fluoxetine, citalopram, sertraline
Most antihistaminic	Moderately antihistaminic	Least antihistaminic
Doxepin,* amitriptyline	Imipramine, protriptyline, clomipramine, nortriptyline	SSRIs
Most serotonergic	Moderately serotonergic	Least serotonergic
SSRI, clomipramine	Imipramine, amitriptyline	Protriptyline, nortriptyline, doxepin
Most noradrenergic	Moderately noradrenergic	Least noradrenergic
Protriptyline,* nortriptyline, imipramine	Amitriptyline, clomipramine, doxepin	Clomipramine, SSRIs
Most seizure potential	Moderate seizure potential	Lowest seizure potential [†]
Amitriptyline, clomipramine, imipramine, doxepin	Protriptyline, nortriptyline	SSRIs

*Greatest effect.
[†]May be safest if there is a seizure focus.
 SSRIs = selective serotonin reuptake inhibitors.

Therefore they should be used cautiously in the elderly or when there is compromised hepatic metabolism. Amitriptyline has moderate effects in inhibiting both serotonin and norepinephrine reuptake, and strong antihistaminic and anticholinergic effects. Doxepin has marked antihistaminic effects but minimal effects on serotonin reuptake and moderate effects on noradrenergic reuptake. The alpha-adrenergic effects of imipramine may aid in improving sphincter control in pets with enuresis, or conflict, excitement or submissive urination while also ameliorating anxiety. However, while doxepin, imipramine, and amitriptyline have all been used to varying degrees in veterinary behavior, there is little evidence of their efficacy in pets. In one study approximately 50% of separation anxiety cases showed some improvement, which is far below the levels of improvement reported with clomipramine or fluoxetine.⁷⁸ No significant improvement was seen in canine aggression cases treated with amitriptyline.⁷⁹ In a retrospective study of compulsive disorders in dogs and cats, clomipramine was significantly more efficacious than amitriptyline.⁸⁰

Clomipramine blocks serotonin reuptake and desmethylclomipramine blocks norepinephrine reuptake into the presynaptic neuron, thereby increasing the concentration of each in the synapse. Clomipramine is metabolized in the liver to an active metabolite, desmethylclomipramine. Peak levels for both clomipramine and desmethylclomipramine are reached in 1–3 hours and terminal half-lives were 4 hours or less. With increasing dosage, mean residence times and terminal half-lives of both compounds are increased.⁸¹ A steady state is achieved in about 1–4 days. In humans, clomipramine has mild anticholinergic

effects, is moderately antihistaminic, and is a potent alpha-1 antagonist. These effects likely account for much of the drug's side-effects, including sedation, dry mouth, retained urine or stool, tachycardia, hypotension, and dizziness. However, in dogs clomipramine is associated with less urinary stasis, cardiac disease, and anticholinergic effects compared to humans, possibly because of a shorter half-life and rapid elimination.⁸¹ In addition, in dogs the ratio of clomipramine to desmethylclomipramine is higher (3:1) than in humans (1:2.5) and it is the desmethylclomipramine that is responsible for most of the anticholinergic properties.⁸¹ At therapeutic doses, neither clomipramine nor amitriptyline altered cardiac rate or rhythm in dogs.⁸² There was also no effect of clomipramine after 28 days on electrocardiogram in cats, although thyroid levels were suppressed.⁸³

Because clomipramine is the most selective inhibitor of serotonin reuptake of all of the TCAs, its indications and applications, including the treatment of compulsive disorders in dogs and humans, more resembles that of the SSRIs. Clomipramine in combination with a behavior modification plan is an effective treatment for separation anxiety.^{10,84} In a follow-up of 76 cases, 12 dogs remained on treatment for over 13 months with no adverse effects or relapse, and 10 of the dogs showed further improvement.⁸⁵ Of 22 dogs with complete resolution, 13.6% relapsed when the drug was ceased.⁸⁵ Clomipramine has been shown to be effective for compulsive and anxiety disorders in dogs and cats^{86–89} and feline urine marking.^{90–92} Urine retention may be a concern at higher doses.⁹³ One RCT found no significant differences between dogs with separation anxiety treated with behavior

modification plus clomipramine and dogs treated with behavior modification alone.⁹⁴ Clomipramine was found to be ineffective in the treatment of cases of owner-related aggression.⁹⁵

TCA's may also be used in combination with other anxiolytic agents. For example, benzodiazepines may be used on an as-needed basis along with the ongoing use of a TCA, for stress-evoking events such as owner departures, thunderstorms, or veterinary visits. In one study clomipramine in combination with behavior modification and alprazolam as needed was effective for the treatment of storm phobias.³² TCA's may also be used in combination with drugs such as gabapentin for the treatment of neuropathic pain.⁹⁶

TCA's may be used in pets for the same problems as SSRIs but some (especially those that sedate) may be more effective at calming. In comparison, serotonin reuptake inhibitors such as fluoxetine may be more likely to cause agitation.

Selective serotonin reuptake inhibitors

SSRIs are selective in their blockade of the reuptake of 5HT_{1A} into the presynaptic neurons. Because they are selective for serotonin reuptake they may have fewer side-effects than TCA's, including less cardiac effects and hypotension and perhaps greater safety in pets with seizures.⁹⁷ In fact, one study found that fluoxetine may have anticonvulsant activity in humans.⁹⁸ They may also be preferable where urine retention, increased intraocular pressure, sedation, or anticholinergic effects might be a concern. Side-effects with SSRIs, particularly fluoxetine, might include reduced appetite. If anorexia or weight loss is significant, then the dose should be reduced. Paroxetine is mildly anticholinergic. Side-effects may therefore include urine or stool retention. In dogs, SSRIs are most often used for the treatment of separation anxiety and compulsive disorders, as well as for the treatment of phobias, fear- and anxiety-induced aggression and for impulse control disorders. In an 8-week RCT with a chewable fluoxetine tablet combined with behavior modification plan, a significantly greater improvement was seen in the fluoxetine group.³² In a second multicenter 6-week RCT of dogs with separation anxiety, overall severity scores were improved for dogs on fluoxetine and no behavior therapy compared to placebo.² Although there was a significant drug effect, greater improvement was achieved using the combination of fluoxetine plus behavior modification.³² Studies indicate that fluoxetine has a T_{max} of 1.8 hours, and 12.8 hours for its active intermediate metabolite norfluoxetine, and reaches a steady state in approximately 10 days.⁹⁹ Since the clearance half-life of fluoxetine is 6.2 hours and 49 hours for norfluoxetine, the start of new medications that might be contraindicated when used in combination may need to be delayed.

SSRIs may also be useful for a wide variety of other extralabel applications, including compulsive disorders, stabilizing mood, reducing impulsivity, some forms of aggression, and urine marking in cats. In a study of generalized anxiety disorders, fluoxetine and paroxetine in combination with behavior modification were effective,¹⁰⁰ and fluoxetine has been useful in some forms of canine aggression.^{101,102} Fluoxetine has also been effective in the treatment of compulsive disorders in dogs,^{103,104} as have sertraline¹⁰³ and citalopram.¹⁰⁵

Fluoxetine may also be effective in the treatment of feline urine marking.^{92,106} The differences in the applications and efficacy of SSRIs may be related to their minor differences in the way they affect neurotransmitters. Based on human studies, Figure 8.2 demonstrates the relative potencies of SSRIs with respect to serotonin reuptake blockade and their effects on dopamine and norepinephrine. Although there have been no studies in pets to demonstrate any difference as to which SSRI would be most suitable for a particular problem, some guidelines have been recommended for applications in dogs and cats based on human studies and anecdotal evidence to date. It has been suggested that sertraline is effective for panic, generalized anxiety, anxious, irritable, and inhibited dogs as well as for compulsive disorders, while fluvoxamine and fluoxetine might be more effective on hyperactivity and aggression as well as compulsive disorders.¹⁰⁷ Paroxetine is used in humans for the treatment of depression, social anxiety, and panic disorders. For pets that exhibit impulsivity, aggressive states, and ritualistic or compulsive disorders, citalopram might be effective, although its efficacy has also been anecdotally reported in patients with separation, situational, social, or generalized anxiety.¹⁰⁸ However, in one preliminary study cardiac fatalities were seen in a small group of beagle dogs at doses of 8 mg/kg/day.¹⁰⁹

SSRIs have been combined with other psychotropic drugs and supplements to enhance their clinical effects, such as with the use of benzodiazepines for calming prior to specific events (e.g., separation anxiety departures, noise phobias); with clonidine either prior to specific events or as adjunctive therapy for fear and territorial aggression or for anxiety disorders such as separation anxiety, noise and storm phobias, and nocturnal barking⁵⁴; and with trazodone for generalized anxiety, separation anxiety, and thunderstorm phobias on an as-needed basis (prior to events) or up to 2–3 times daily or prior to bedtime for sleep disturbances. Benzodiazepine levels may be increased when used with SSRIs that inhibit CYP2C19 or 3A4 and trazodone levels increase with SSRIs that inhibit CYP2D6 or 3A4. Since tryptophan is a precursor to serotonin, it has been suggested that tryptophan supplementation may be effective in enhancing mood and memory and treating impulsive behavior in pets. However, currently no clinical benefits have been reported, except for one study where a low-protein diet and tryptophan were combined (see Chapters 9 and 10). However, both tryptophan and buspirone have been suggested as augmentation therapy to increase the serotonin pool in pets where clomipramine or serotonin reuptake inhibitors do not achieve an adequate clinical response. Buspirone levels may be elevated by drugs that inhibit CYP 3A4. When using any drugs concurrent with SSRIs that might further increase serotonin, pets should be more closely monitored for any signs of serotonin syndrome. SSRIs have also been combined in humans with gabapentin for refractory anxiety disorders, or hypnotics, trazodone, or mirtazapine for agitation or insomnia. When treating with fluoxetine, if there is insufficient calming of panic or anxiety disorders, trazodone or benzodiazepines might be dispensed concurrently.

SSRIs and P450 enzyme inhibition

Most drugs are converted into metabolites either in the gut wall or in the liver (phase 1), followed by glucoronidation

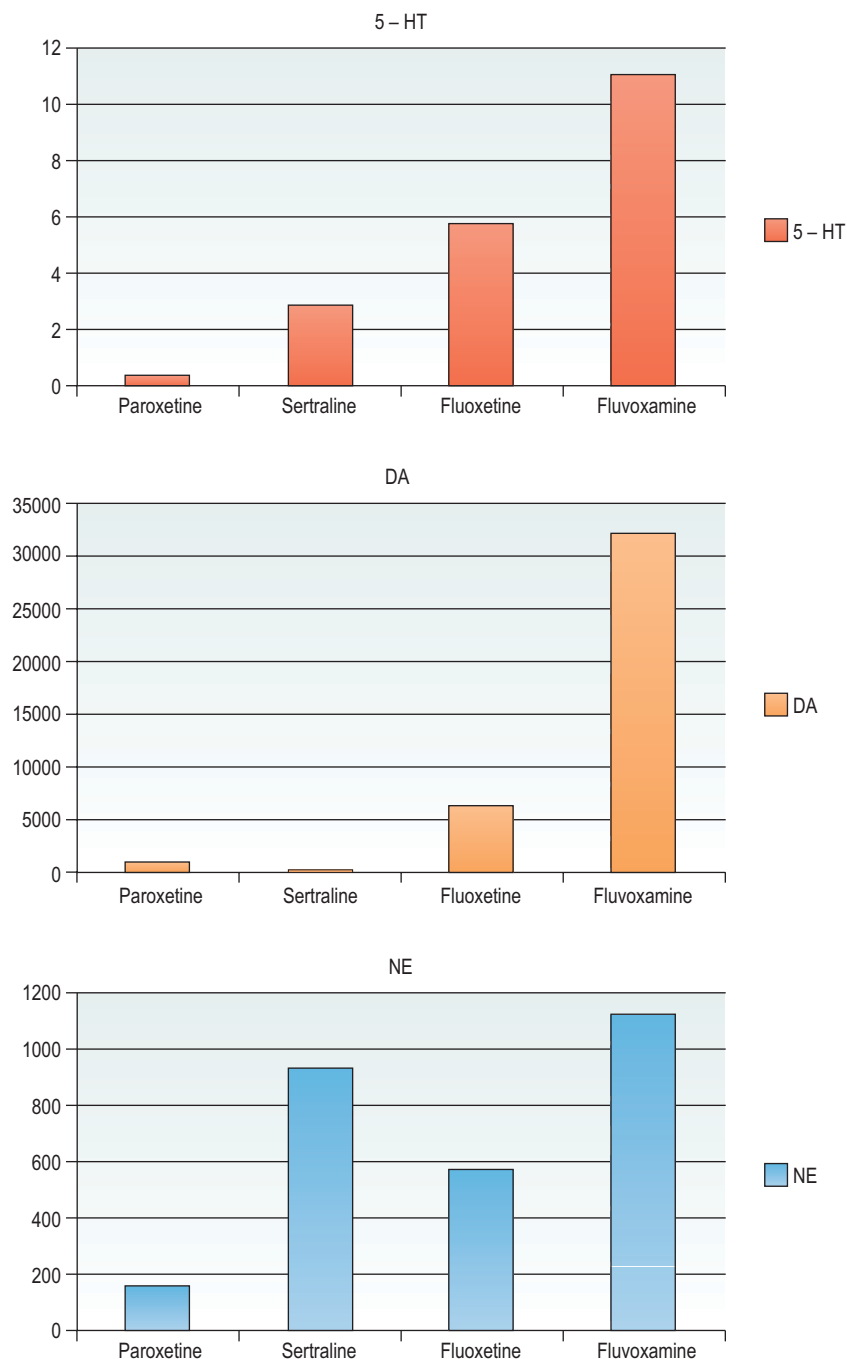


Figure 8.2 Reuptake inhibition profiles of SSRIs. Mean concentration of drug (nmol/L) required to inhibit re-uptake by 50%. The higher the value, the smaller the reuptake inhibition potency. The low values of these drugs for 5-HT compared with DA and NE show how selective they are for 5-HT. (Reproduced from Sussman N, *Selective Serotonin Reuptake Inhibitors*. In: Sadock BJ, Sadock VA, Ruiz P (eds), *Kaplan & Sadock's Comprehensive Textbook of Psychiatry* (9th ed). Wolters Kluwer – Lippincott Williams & Wilkins, Philadelphia, 2009; 3193.)

or sulfation prior to excretion by the kidneys. Most phase 1 metabolism is mediated by these P450 enzymes. These metabolites may or may not be pharmacologically active; in addition, those that are active can have a different pharmacological profile from the parent compound. Therefore, SSRIs that inhibit cytochrome enzymes can cause increased toxicity or an altered therapeutic effect when used with drugs that are metabolized by these enzymes. P450 enzymes can also be induced, such as the effects of phenobarbital, St. John's wort, or carbamazepine on CYP3A, leading to a faster

clearance of drugs metabolized by these enzymes and resulting in reduced clinical effect or a need for higher dosing.

Since there are well-documented genetic polymorphisms in these enzyme systems in humans, between populations and individuals, responses can range from extensive metabolizers to poor metabolizers.¹¹⁰ While evaluation of human data may provide some insight about potential drug interactions in pets, there may be significant species differences between humans and pets. In addition, genetic polymorphisms in pets between breeds as well as

Table 8.3 Effects of selective serotonin reuptake inhibitors on cytochrome P450 enzyme systems in humans

Cytochrome	Inhibitors	Substrates: potential interactions
1A2	Fluvoxamine++++	TCAs, propranolol, chlorpromazine, mirtazapine, fluvoxamine, haloperidol
2C19	Fluoxetine (norfluoxetine) +++ Fluvoxamine+++ Sertraline+ Paroxetine+ Citalopram/didemethylcitalopram+	TCAs, diazepam, propranolol, omeprazole, citalopram, fluoxetine, sertraline, phenobarbital
2D6	Paroxetine++++ Fluoxetine (norfluoxetine) ++++ Citalopram++ St. John's wort++ ¹ Sertraline (desmethylsertraline)++ Fluvoxamine +	TCAs, fluoxetine, paroxetine, citalopram, fluvoxamine, trazodone, chlorpromazine, narcotics, codeine, tramadol, propranolol, dextromethorphan, chlorpheniramine, phenothiazines, haloperidol, risperidone, amphetamines
3A4	Ketoconazole (listed for comparative purposes)++++ Fluvoxamine+++ Fluoxetine+++(norfluoxetine) Sertraline (desmethylsertraline) ++ St. John's wort++ ¹ Paroxetine+	TCAs, benzodiazepines, buspirone, citalopram, paroxetine, sertraline, mirtazapine, codeine, tramadol, carbamazepine, cortisol/dexamethasone, estradiol/progesterone, testosterone, dextromethorphan, erythromycin, omeprazole, ketoconazole, trazodone, chlorpromazine, diltiazem, haloperidol, resperidone

++++ Greatest degree of inhibition; +++ moderate inhibition; ++ mild inhibition; + may lead to mild inhibition.

TCA, tricyclic antidepressants.

¹Orbach RS. Inhibition of cytochrome P450 enzymes by constituents of St John's wort, an herbal preparation used in the treatment of depression. *J Pharmacol Exp Ther* 2000;94:88–95.

individuals in how drugs are metabolized undoubtedly exist in pets.

In humans, fluvoxamine is the SSRI most likely to affect CYP1A2; fluoxetine and fluvoxamine most likely to affect CYP2C19; paroxetine and fluoxetine most likely to affect CYP2D6 (followed by sertraline, citalopram, and fluvoxamine); and fluoxetine (due to norfluoxetine) and fluvoxamine would be most likely to affect CYP3A (although far less than ketoconazole), followed to a lesser extent by sertraline and paroxetine. Therefore caution should be exercised when combining fluvoxamine or fluoxetine with TCAs, propranolol, paroxetine, narcotics, codeine, and tramadol due to possible CYP2D6 inhibition. Caution should also be taken in combining fluvoxamine and fluoxetine with TCAs, benzodiazepines, carbamazepine, ketoconazole, and sertraline due to possible CYP3A4 inhibition.^{111,112} For details extrapolated from human data on cytochrome P450 enzyme effects, see Table 8.3. In dogs, two CYP2C enzymes have been identified: CYP2C21, which is the predominant CYP identified to date in canine liver, and CYP2C41, which is not present in all dogs. The canine ortholog (comparable enzyme) to CYP2D6 is CYP2D15, which metabolizes dextromethorphan, propranolol, imipramine, and celecoxib, while the ortholog of CYP3A4 is CYP3A12, which metabolizes benzodiazepines, erythromycin, testosterone, and progesterone. There has been little published work on CYP450 enzymes in cats.¹¹³

Atypical antidepressants

Trazodone is a serotonin 2A antagonist reuptake inhibitor. It has been used in veterinary behavior as an adjunctive treatment to enhance pharmacologic treatment that has been insufficiently responsive. Adverse effects of increasing the dose of the primary drug might be reduced and efficacy

improved. In humans it has been used as an antidepressant, anxiolytic, and for obsessive-compulsive disorders. When used with an SSRI or TCA the effects may be synergistic. Trazodone has been reported to be useful in the treatment of anxiety in dogs, primarily as an adjunctive treatment to other behavioral medications, such as SSRIs, TCAs, and benzodiazepines. It may be useful for treating generalized anxiety, separation anxiety, and thunderstorm phobias and to enhance calming such as in hospitalized pets. In humans it is helpful for inducing sleep. Trazodone may also be used in the treatment of certain forms of aggression, including inter-dog aggression and impulse control disorders. Trazodone can be used on an as-needed basis or up to 2–3 times daily.¹¹⁴

Mianserin is available in Europe as an atypical antidepressant. It blocks presynaptic alpha-adrenoreceptors with little effect on serotonin transmission. Because of alpha-adrenergic and histaminic blockade, it is sedating and may lead to postural hypotension in people. It may be a useful adjunct for pain management and may be used to enhance the efficacy of fluoxetine therapy in depressed patients. According to the so-called Pageat (French) approach to behavioral medicine, it has been used in stage 2 hypersensitivity–hyperactivity disorders and reactive depression and phobias in dogs. In most geographic areas, mianserin has been phased out in favor of its analog and successor, mirtazapine.

Mirtazapine is a tetracyclic antidepressant, which has both serotonergic and noradrenergic effects. It is used in pets primarily for its antiemetic, antinausea, and appetite-stimulating effects. In humans it has been used for depression, panic disorders, generalized anxiety disorders, posttraumatic stress disorders, and insomnia. A dose of 1.88–3.75 mg q 72 hours in cats and 3.75 (<10 kg) to 15 mg (>35 kg) once daily in dogs (or 0.6 mg/kg up to a maximum of 30 mg/day) has been recommended.^{115,116} A recent study in healthy young

cats demonstrated a significant increase in food intake over placebo with no significant difference between low dose (1.88 mg) and high dose (3.75 mg). However an increase in vocalization and affection was seen at the higher dose. A significant difference in the half-life was demonstrated with the low dose, which was compatible with 24-hour dosing intervals.¹¹⁷ This is an important consideration since for most cats there is no longer any effect on appetite or behavior after 24 hours.¹¹⁷ However, in a preliminary investigation into the half-life in cats with chronic kidney disease, a longer half-life and prolonged clearance were demonstrated.¹¹⁸ Therefore less frequent dosing, perhaps every second day, or a lower dose (e.g., 1 mg) might be warranted.¹¹⁹ Similar precautions might also be warranted in cats with compromised hepatic function.

The most common side-effects are drowsiness and vocalization in cats, although at higher doses some cats become more active. Mirtazapine might also be a consideration to improve appetite in stressed or anxious cats, and might increase affection and decrease avoidance behaviors in cats that are stressed or painful. It might also be used alone or in conjunction with SSRIs or benzodiazepines for pets with anxiety disorders. Since mirtazapine is a serotonin receptor antagonist it is less likely to cause serotonin syndrome. However, cautious dosing is recommended in small dogs and cats, pets with hepatic or renal failure, and when combining with other drugs that might increase serotonin. In addition, since it is a substrate for CYP2D6, 1A2, and 3A4, it should be used cautiously with SSRIs.

Serotonin syndrome

Serotonin syndrome is a serious and potentially fatal concern, which may arise when antidepressants that inhibit serotonin reuptake are used at high doses or in combination with other drugs and dietary supplements that may increase serotonin. TCAs and SSRIs should not be used concurrently with MAOIs, such as selegiline or amitraz. In addition, combination with other antidepressants should generally be avoided, although there may be situations in which prudent and cautious use might be considered – see combination/augmentation therapy, below. Caution should also be used when combining with St. John's wort (*Hypericum perforatum*), amphetamines, and possibly tramadol, tryptophan (i.e., tryptophan supplements or commercial diets supplemented with tryptophan), metoclopramide, S-adenosylmethionine (SAME), or dextromethorphan as well as serotonin receptor agonists such as buspirone and bromocriptine. The serotonin syndrome results mainly in neurological, autonomic, and gastrointestinal signs, including restlessness, mental confusion, hyperesthesia, shivering, shaking, hyperthermia, tachycardia, tachypnea, abdominal pain, diarrhea, vomiting, hypersalivation, twitching, tremors, seizures, coma, and death.¹²⁰ With mild clinical signs, treatment merely requires stopping the administration of drugs, herbal remedies, or dietary supplements that enhance serotonin. In severe cases, serotonin blockers (such as cyproheptadine at 1.1 mg/kg every 1–4 hours) can be administered, as well as other drugs to control signs like agitation, seizures, and hyperthermia. Diazepam or phenobarbital may help to control seizures and tremors. Fluid therapy might be required to maintain cardiovascular function and

fans and cold baths could be applied to control excessive body temperature.¹¹⁴ Phenothiazines should be used with caution since they may lower the seizure threshold. With proper veterinary care, cases that survive appear clinically normal within 36 hours. Nevertheless, until the complete remission of symptoms, affected dogs should be closely monitored. Having owners take a baseline heart rate and reporting any significant increase may help to identify a problem before more noticeable clinical side-effects appear.

N-methyl-D-aspartic acid antagonists

Altered glutaminergic neurotransmission may be a factor in the pathogenesis of compulsive disorders, in which case blocking glutamate-sensitive NMDA with drugs such as memantine, amantadine, or dextromethorphan may be an effective treatment option, often in conjunction with SSRIs.^{121–123} Memantine is an NMDA receptor antagonist that is used in human medicine for moderate to severe cases of dementia. In rodent studies it has been shown to improve cognition and reduce anxiety.¹²⁴ In one case series, memantine reduced the severity of compulsive disorders, including light and shadow chasing, spinning and circling, and tail chasing in 64% of 11 treated dogs within 2 weeks of treatment.¹²¹ Memantine may be effective alone or, when combined with fluoxetine, may have a synergistic effect. Dextromethorphan may also be useful because of its NMDA antagonist properties.¹²³ However, due to its short half-life, rapid clearance, and variable absorption in dogs, it may not be a reliable form of therapy.¹²⁵ (For further details on compulsive disorders, see [Chapter 11](#).)

Combination/augmentation therapy

Combining drugs may be the best way to achieve efficacy for some refractory problems, based on human models and examples for psychotropic drug therapy. Another common reason for combination therapy is that most of the drugs licensed for veterinary behavior can take several weeks or longer to achieve therapeutic effect; therefore for immediate or situational use, drugs such as benzodiazepines may also be required. When drugs are used for augmentation therapy, extreme caution and close monitoring should be exercised since enhancing the effects of a drug could also increase side-effects or have adverse effects. When combining drugs that might inhibit CYP450 enzyme systems, be cautious of potential increased levels of the substrates. In addition, if drug combinations might increase serotonin, cautious monitoring is necessary for possible signs of serotonin syndrome. Caution is also needed when combining drugs that might have hypotensive or hypertensive effects. Psychotropic drugs can also be combined with complementary therapeutics such as pheromones, Harmonase or alpha-casein (see [Chapter 9](#)). However, knowledge of where these complementary modalities might exert their therapeutic effect should be considered for any potential contraindications; for example, drugs that enhance serotonin transmission such as clomipramine or fluoxetine should be used cautiously with natural products that might also affect serotonin such as SAME, tryptophan, or St. John's wort. Although associations

between specific psychotropic drugs have been discussed through the chapter, some of the combinations are summarized below.

1. One of the most common combinations is when benzodiazepines are added for short-term immediate effects to drugs that are for more chronic use, such as TCAs, SSRIs, or trazodone. Clonazepam can also be used as adjunctive therapy with anticonvulsants. A combination of a benzodiazepine plus an SSRI (e.g., sertraline and clonazepam) has been shown to be effective in people for more immediate calming in panic and anxiety disorders.¹²⁶ Concurrent therapy with benzodiazepines may be of particular importance during the initial stages of antidepressant therapy, since antidepressants take several weeks to be effective and may produce a transient restlessness and perhaps even an increase in anxiety or agitation. In fact, when an antidepressant such as fluvoxamine, fluoxetine, or imipramine is dispensed, a short course of a benzodiazepine such as alprazolam might be considered to overcome initial agitation or insomnia.
2. Melatonin has also been combined with antidepressants for chronic anxiety and phobic disorders such as storm phobias.
3. TCAs and SSRIs (fluoxetine plus clomipramine or fluoxetine plus amitriptyline) can be used to augment each other in compulsive, anxiety, and panic disorders. Since fluoxetine inhibits the metabolism of clomipramine, it increases its potency without increasing its dose. When combining a TCA with fluoxetine or paroxetine, reduce the dose by 10–25%, and when combining with sertraline, reduce the dose by 50%. Use cautiously due to the potential for serotonin syndrome.
4. Clomipramine or SSRIs might be combined with memantine for refractory obsessive-compulsive disorders.
5. Pindolol and propranolol have been combined with SSRIs and clomipramine. They may take away the physiological signs of anxiety while the drug exerts its central effect, and may act to increase the availability of serotonin by preventing the initial downregulation associated with antidepressant therapy. Pindolol may also block presynaptic autoreceptors to reduce the initial downregulation associated with reuptake inhibition. Propranolol might also be combined with one or more of buspirone, phenobarbital, benzodiazepines, or selegiline.
6. Buspirone does not have a sedative effect and might therefore be combined with sedatives, or benzodiazepines when additional anxiolytic effects are desired.
7. Trazodone may be used on a daily or as-needed basis as adjunctive therapy with a TCA or an SSRI for generalized anxiety, separation anxiety, thunderstorm phobias, interdog aggression, and impulse control disorders. Trazodone might also be added to fluoxetine for a more calming effect for anxiety and panic disorders.
8. Clonidine can be used on an as-needed basis or concurrent with a serotonin reuptake inhibitor or with buspirone for refractory cases of fear and anxiety, including fear and territorial aggression, separation anxiety, noise and storm phobias, and nocturnal barking. Trazodone or a benzodiazepine might also be considered concurrently.
9. An SSRI or TCA might be combined with buspirone or tryptophan to increase the serotonin pool in refractory cases. Monitor for signs of serotonin syndrome when combining drugs that might increase serotonin.
10. In humans, other combinations with SSRIs include gabapentin for anxiety and pain disorders, mirtazapine for insomnia and agitation, and hypnotics for insomnia. Gabapentin might also be combined with TCAs for anxiety disorders and pain control.
11. In humans, thyroid supplementation has been used in conjunction with SSRIs or TCAs as augmentation therapy for mood elevation.

References

1. Centre for Evidence Based Medicine (CEBM). University of Oxford, Available online at: <http://www.cebm.net/index.aspx?o=1025>
2. Landsberg GM, Melese P, Sherman-Simpson B, et al. The effectiveness of fluoxetine chewable tablets in the treatment of canine separation anxiety. *J Vet Behav Clin Appl Res* 2008;3:11–18.
3. Cracknell NR, Mills DS. A double-blind placebo-controlled study into the efficacy of a homeopathic remedy for fear of firework noises in the dog (*Canis familiaris*). *Vet J* 2008;177:80–8.
4. Cracknell NR, Mills DS. An evaluation of owner expectation on apparent treatment effect in a blinded comparison of 2 homeopathic remedies for firework noise sensitivity in dogs. *J Vet Behav* 2011;6:21–30.
5. Mills DS, Redgate SE, Landsberg GM. A meta-analysis of studies of treatments for feline urine spraying. *PloS ONE* 2011;6:e18448.
6. DePorter TL, Landsberg GM, Araujo JA, et al. Harmonase reduces noise-induced fear and anxiety in a laboratory canine model of thunderstorm simulation: a blinded and placebo-controlled study. *J Vet Behav* 2011;doi:10.1016/j.jveb.2011.05.024.
7. Araujo JA, de Rivera C, Ethier JL, et al. Anxitane tablets reduce fear of human beings in a laboratory model of anxiety-related behavior. *J Vet Behav* 2010;5:268–75.
8. Ciribassi J, Luescher A, Pasioske KS, et al. Comparative bioavailability of transdermal versus oral fluoxetine in healthy cats. *Am J Vet Res* 2003;64:994–8.
9. Mealey KL, Peck KE, Bennett BS, et al. Systemic absorption of amitriptyline and buspirone after oral and transdermal administration to healthy cats. *J Vet Intern Med* 2004;18:43–6.
10. King JN, Simpson BS, Overall KL, et al. Treatment of separation anxiety in dogs with clomipramine: results from a prospective, randomised, double-blind, placebo-controlled, parallel-group multicenter clinical trial. *Appl Anim Behav Sci* 2000;67:255–75.
11. Sussman N. Biological therapies. In: Sadock BJ, Sadock VA, Ruiz P, editors. *Kaplan and Sadock's comprehensive textbook of psychiatry*. 9th ed. Philadelphia: Lippincott Williams & Wilkins; 2009. p.2965–3334.

12. Reisner IR, Mann JJ, Stanley M, et al. Comparison of cerebrospinal fluid monoamine metabolite levels in dominant-aggressive and non-aggressive dogs. *Brain Res* 1996;714:57–64.
13. Westergaard GC, Suomi SJ, Higley JD, et al. CSF 5-HIAA and aggression in female macaque monkeys; species and interindividual differences. *Psychopharmacology (Berl)* 1999;146:440–6.
14. Fairbanks LA, Melega WP, Jorgensen MJ, et al. Social impulsivity inversely associated with CSF 5-HIAA and fluoxetine exposure in vervet monkeys. *Neuropsychopharmacology* 2001;24:370–8.
15. Saudou F, Amara DA, Dierich A, et al. Enhanced aggressive behavior in mice lacking 5-HT_{1B} receptor. *Science* 1994;265:1875–8.
16. Matsumoto M, Yoshioka M. Possible involvement of serotonin receptors in anxiety disorders. *Nippon Yakurigaku Zasshi* 2000;115:39–44.
17. Amat M, Mariotti VM, Le Brech S, et al. Differences in serotonin levels between aggressive English cocker spaniels and aggressive dogs of other breeds. *J Vet Behav* 2010;5:46.
18. Rosado B, Garcia-Belenguer S, León M. Blood concentrations of serotonin, cortisol and dehydroepiandrosterone in aggressive dogs. *Appl Anim Behav Sci* 2010;123:124–30.
19. Çakiroglu D, Meral Y, Sancak AA, et al. The relationship between the serum concentrations of serotonin and lipids and aggression in dogs. *Vet Rec* 2007;161:59–61.
20. Stein DJ, van Honk J, Ipser J, et al. Opioids: from physical pain to the pain of social isolation. *CNS Spectr* 2007;12:669–74.
21. Knowles PA, Conner RL, Panksepp J. Opiate effects on social behavior of juvenile dogs as a function of social deprivation. *Pharmacol Biochem Behav* 1989;33:533–7.
22. Gregg TR, Siegel A. Differential effects of NK1 receptors in the midbrain periaqueductal gray upon defensive rage and predatory attack in the cat. *Brain Res* 2003;994:5–66.
23. Baluk P. Neurogenic inflammation in skin and airways. *J Invest Dermatol Symp Proc* 1997;2:76–81.
24. Duffy RA. Potential therapeutic targets for neurokinin-1 receptor antagonists. *Expert Opin Emerg Drugs* 2004;9:9–21.
25. O'Connor TM, O'Connell J, O'Brien DI, et al. The role of substance P in inflammatory disease. *J Cell Physiol* 2004;201:167–80.
26. Hickman MA, Cox SR, Mahabir S, et al. Safety, pharmacokinetics and use of novel NK-1 receptor antagonist maropitant (Cerenia) for the prevention of emesis and motion sickness in cats. *J Vet Pharmacol Ther* 2008;31:220–9.
27. Hart BL. Behavioral indications for phenothiazine and benzodiazepine tranquilizers in dogs. *J Am Vet Med Assoc* 1985;186:1175–80.
28. Pageat P. *Pathologie du comportement du chien*, 2nd ed. Paris: Editions du Point Vétérinaire; 1998.
29. Cryan JE, Dev KK. Animal models of anxiety. In: Blanchard RJ, Blanchard DC, Griebel G, et al. editors. *Handbook of anxiety and fear*. Amsterdam: Academic Press; 2008. p. 276–8.
30. Miczek KA, Fish EW. Monoamines, GABA, glutamate and aggression. In: Nelson RJ, editor. *Biology of aggression*. Oxford: Oxford University Press; 2006. p.114–49.
31. Herron M, Shofer FS, Reisner IR. Restrospective evaluation of the effects of diazepam in dogs with anxiety-related behaviour problems. *J Am Vet Med Assoc* 2008;233:1420–4.
32. Crowell-Davis SL, Seibert LM, Sung W, et al. Use of clomipramine, alprazolam and behavior modification for the treatment of storm phobias in dogs. *J Am Vet Med Assoc* 2003;222:744–8.
33. Notari L. Combined use of selegiline and behaviour modifications in the treatment of cases in which fear and phobias are involved: a review of 4 cases. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2006. p. 267–9.
34. Center SA, Elston TH, Rowland PH, et al. Fulminant hepatic failure associated with oral administration of diazepam in 11 cats. *J Am Vet Med Assoc* 1996;209:618–25.
35. Plumb veterinary drug handbook. 6th ed. Iowa: Blackwell Publishing, Ames; 2008.
36. Löscher W, Frey HH. Pharmacokinetics of diazepam in the dog. *Arch Int Pharmacodyn Ther* 1981;254:180–95.
37. Mariani CL. A comparison of intranasal and intravenous lorazepam in normal dogs. Charlotte, NC: Proceedings of the 21st ACVIM Forum; 2003.
38. Hart BL, Eckstein RA, Powell KL, et al. Effectiveness of buspirone on urine spraying and inappropriate urination in cats. *J Am Vet Med Assoc* 1993;203:254–8.
39. Musulin SE, Mariani CL, Papich MG. Diazepam pharmacokinetics after nasal drop and atomized nasal administration in dogs. *J Vet Pharm Ther* 2011;34:17–24.
40. Hendricks JC, Lager A, O'Brien D, et al. Movement disorders during sleep in cats and dogs. *J Am Vet Med Assoc* 1989;194:686–9.
41. Schubert TA, Chidester M, Chrisman CL. Clinical characteristics, management and long-term outcome of suspected rapid eye movement sleep behaviour disorder in 14 dogs. *J Small Anim Pract* 2011;52:93–100.
42. Georgi M, Portella DA, Breggi G, et al. Pharmacokinetics and pharmacodynamics of zolpidem after oral administration of a single dose in dogs. *Am J Vet Res* 2012;73:1650–6.
43. Elliott B, Joyce E, Shorvon S. Delusions, illusions and hallucinations in epilepsy: Part 1, 2. *Epilepsy Res* 2009;85:162–86.
44. Dodman NH, Knowles KE, Shuster L, et al. Behavioral changes associated with suspected complex partial seizures in Bull Terriers. *J Am Vet Med Assoc* 1996;208:688–091.
45. Walker R, Fisher J, Neville P. The treatment of phobias in the dog. *Appl Anim Behav Sci* 1997;52:275–89.
46. Munana KR. Newer options for medically managing refractory canine epilepsy. *Vet Med* 2009;July:342–8.
47. Carter GR. Carbamazepine for the treatment of canine aggression; seven case studies. New Orleans: ACVB/AVSAB Proceedings; 2008. p. 50.
48. Schwartz S. Carbamazepine in the control of aggressive behavior in cats. *J Am Anim Hosp Assoc* 1994;30:515–9.
49. Farooq MU, Bhatt A, Majid A, et al. Levetiracetam for managing neurologic and psychiatric disorders. *Am J Health Syst Pharm* 2009;66:541–61.
50. Moore SA, Munana KR, Papich MG. Levetiracetam pharmacokinetics in healthy dogs following oral administration of single and multiple doses. *Am J Vet Res* 2010;71:337–41.
51. Schneider BM, Dodman NH, Faissier D, et al. Clinical use of an herbal-derived compound (Huperzine A) to treat putative complex partial seizures. *Epilepsy Behav* 2009;15:529–34.
52. Plegne P, Mellerup ET. Pindolol and the acceleration of the antidepressant response. *J Affect Disord* 2003;75:285–9.
53. Pérez V, Gilaberte I, Faries D, et al. Randomised, double-blind, placebo-controlled trial of pindolol in combination with fluoxetine antidepressant treatment. *Lancet* 1997;349:1594–7.
54. Ogata N, Dodman NH. The use of clonidine in the treatment of fear-based behavior problems in dogs: an open trial. *J Vet Behav: Clin Appl Res* 2011;6:130–7.
55. Carofiglio F, Hamaide AJ, Farnir F, et al. Evaluation of the urodynamic and hemodynamic effects of orally administered phenylpropanolamine and ephedrine in female dogs. *Am J Vet Res* 2006;67:723–30.
56. Lucot JB, Crampton GH. Buspirone blocks motion sickness and xylazine induced emesis in the cat. *Aviat Space Environ Med* 1987;58:989–9.
57. Hoffmeister EH, Egger CM. Evaluation of diphenhydramine as a sedative for dogs. *J Am Vet Med Assoc* 2005;226:1092–4.

58. Schwartz S. Use of cyproheptadine to control urine spraying in a castrated male domestic cat. *J Am Vet Med Assoc* 1999;215:501–2. 482.
59. Sirinarumitr K, Johnston SD, Kustritz MVR, et al. Effects of finasteride on size of the prostate gland and semen quality in dogs with benign prostatic hypertrophy. *J Am Vet Med Assoc* 2001;218:1275–80.
60. Cockshut ID. Clinical pharmacokinetics of goserelin. *Clin Pharmacokinet* 2000;39:27–48.
61. Lombardi P, Florio S, Pagnini U, et al. Ovarian function suppression with a GnRH analogue: d-ser(But[t]) [6]-Arzgly[10]-LHRH (Goserelin) in hormone dependent canine mammary cancer. *J Vet Pharmacol Ther* 1999;22:56–61.
62. Goericke-Pesch S, Georgiev P, Antonov A, et al. Clinical efficacy of a GnRH-agonist implant containing 4.7 mg deslorelin, Suprelorin, regarding suppression of reproductive function in tomcats. *Theriogenology* 2011;75: 803–10.
63. Harvey MJA, Cauvin A, Dale M, et al. Effect and mechanisms of the antiprolactin drug cabergoline on pseudopregnancy in the bitch. *J Small Anim Pract* 1997;38:336–9.
64. White SD. Naltrexone for treatment of acral lick dermatitis in dogs. *J Am Vet Med Assoc* 1990;196:1073–6.
65. Brown SA, Crowell-Davis S, Malcolm T, et al. Naloxone-responsive compulsive tail chasing in a dog. *J Am Vet Med Assoc* 1987;190:884–6.
66. Brignac MM. Hydrocodone treatment of acral lick dermatitis. Montreal: Proceedings of the 2nd world congress of veterinary dermatology; 1992.
67. Reisner I. Use of lithium for treatment of canine dominance-aggression: a case study. *Appl Anim Behav Sci* 1994;39:190.
68. Milgram NW, Ivy GO, Head E, et al. The effect of l-deprenyl on behavior, cognitive function, and biogenic amines in the dog. *Neurochem Res* 1993;18:1211–19.
69. Bruyette D, Ruehl WW, Smidberg TL. Canine pituitary-dependent hyperadrenocorticism: a spontaneous animal model for neurodegenerative disorders and their treatment with l-deprenyl. *Progr Brain Res* 1995;106:207–15.
70. Ruehl WW, Griffin D, Bouchard G, et al. Effects of l-deprenyl in cats in a one month dose escalation study. *Vet Pathol* 1996;33:621.
71. Mills D, Ledger R. The effects of oral selegiline hydrochloride on learning and training in the dog: a psychobiological interpretation. *Prog Neuro-Psychopharmacol Biol Psychiatry* 2001;25:1597–613.
72. Landsberg GM. Therapeutic options for cognitive decline in senior pets. *J Am Anim Hosp Assoc* 2006;42:407–13.
73. Dehasse J. Retrospective study on the use of Selgian in cats. New Orleans: Presentation to the American Veterinary Society of Animal Behavior; 1999.
74. Luescher UA. Hyperkinesis in dogs: six case reports. *Can Vet J* 1993;34:368–70.
75. Burghardt W. Repetitive and self traumatic behaviors. San Antonio: Presentation to the American Veterinary Society of Animal Behavior specialty meeting AAHA; 1996.
76. Sherman-Simpson B, Landsberg GM, Reisner IR, et al. Effects of Reconcile (fluoxetine) chewable tablets plus behavior management for canine separation anxiety. *Vet Ther* 2007;8:18–31.
77. Santarelli L, Saxe M, Gross C, et al. Hippocampal neurogenesis contributes to the behavioral effects of antidepressants. *Science* 2003;301:805–9.
78. Takeuchi Y, Houpt KA, Scarlett JM. Evaluation of treatments for separation anxiety in dogs. *J Am Vet Med Assoc* 2000;216:342–3452.
79. Virga V, Houpt KA, Scarlett JM. Efficacy of amitriptyline as a pharmacologic adjunct to behavioral modification in the management of aggressive behaviors in dogs. *J Am Anim Hosp Assoc* 2001;37:325–50.
80. Overall KL, Dunham AE. Clinical features and outcome in dogs and cats with obsessive compulsive disorder; 126 cases (1989–2000). *J Am Vet Med Assoc* 2002;144:5–52.
81. King JN, Maurer MP, Altman B, et al. Pharmacokinetics of clomipramine in dogs following single-dose and repeated-dose oral administration. *Am J Vet Res* 2000;61:80–5.
82. Reich MR, Ohad DG, Overall KL, et al. Electrocardiographic assessment of antianxiety medication in dogs and correlation with serum drug concentrations. *J Am Vet Med Assoc* 2000;216:1571–5.
83. Martin KM. Effect of clomipramine on the electrocardiogram and serum thyroid concentrations of healthy cats. *J Vet Behav* 2010;5:123–9.
84. Petit S, Pageat P, Chaurand JP, et al. Efficacy of clomipramine in the treatment of separation anxiety in dogs: clinical trial. *Revue Med Vet* 1999;150:133–40.
85. King JN, Overall KL, Appleby BS, et al. Results of a follow-up investigation to a clinical trial testing the efficacy of clomipramine in the treatment of separation anxiety. *Appl Anim Behav Sci* 2004;89:233–42.
86. Hewson CJ, Luescher UA, Parent JM, et al. Efficacy of clomipramine in the treatment of canine compulsive disorder. *J Am Vet Med Assoc* 1998;213:1760–5.
87. Rapaport JL, Ryland DH, Kriete M. Drug treatment of canine acral lick, an animal model of obsessive-compulsive disorder. *Arch Gen Psychiatry* 1992;49:517–21.
88. Seksel K, Lindeman MJ. Use of clomipramine in the treatment of anxiety-related and obsessive-compulsive disorders in cats. *Aust Vet J* 1998;76:317–21.
89. Goldberger E, Rapaport JL. Canine acral lick dermatitis: response to the antiobsessional drug clomipramine. *J Am Anim Hosp Assoc* 1991;27:179–82.
90. Landsberg G, Wilson AL. Effects of clomipramine on cats presented for urine marking. *J Am Anim Hosp Assoc* 2005;41:3–11.
91. King JN, Steffan J, Heath SE, et al. Determination of the dosage of clomipramine for the treatment of urine spraying in cats. *J Am Vet Med Assoc* 2004;225:881–7.
92. Hart BL, Cliff KD, Tynes VV, et al. Control of urine marking by use of long-term treatment with fluoxetine or clomipramine in cats. *J Am Vet Med Assoc* 2005;226:378–82.
93. Pfeiffer E, Guy N, Cribb A. Clomipramine-induced urinary retention in a cat. *Can Vet J* 1999;40:265–7.
94. Podberscek AL, Hsu Y, Serpell JA. Evaluation of clomipramine as an adjunct to behavioural therapy in the treatment of separation-related problems in dogs. *Vet Record* 1999;145:365–9.
95. White MM, Neilson JC, Hart BL, et al. Effects of clomipramine hydrochloride on dominance-related aggression in dogs. *J Am Vet Med Assoc* 1999;215:1288–91.
96. Gilron I, Bailey JM, Tu D, et al. Nortriptyline and gabapentin, alone and in combination for neuropathic pain: a double-blind, randomized controlled crossover trial. *Lancet* 2009;10:1252–61.
97. Steinberg MI, Smallwood JK, Holland DR, et al. Hemodynamic and electrocardiographic effects of fluoxetine and its major metabolite norfluoxetine in anesthetized dogs. *Toxicol Appl Pharmacol* 1986;82:70–9.
98. Robinson RT, Drafts BC, Fisher JL. Fluoxetine increases GABA-A receptor activity through a novel modulatory site. *J Pharm Exp Therap* 2003;304:978–84.
99. Product Monologue, Elanco Animal Health, Indianapolis, Indiana NADA #141–272. Approved by FDA
100. Reisner I. Diagnosis of canine generalized anxiety disorder and its management with behavioral modification and fluoxetine or paroxetine; A retrospective summary of clinical experience (2001–2003). *J Am Anim Hosp Assoc* 2003;39:512.
101. Dodman NH, Donnelly R, Shuster L, et al. The use of fluoxetine to treat dominance aggression in dogs. *J Am Vet Med Assoc* 1996;209:1585–7.

102. Dodman NH. Pharmacologic treatment of aggression in veterinary patients. In: Dodman NH, Shuster L, editors. *Psychopharmacology of animal behavior disorders*. Malden, Ma: Blackwell Science; 1998. p. 41–63.
103. Wynchank D, Berk M. Fluoxetine treatment of acral lick dermatitis in dogs: a placebo-controlled randomized double blind trial. *Depress Anxiety* 1998;8:21–3.
104. Irimijami M, Luescher UA. Effect of fluoxetine hydrochloride in treating canine compulsive disorder. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. p. 198–200.
105. Stein DJ, Mendelsohn I, Potocnik E, et al. Use of the selective serotonin reuptake inhibitor citalopram in a possible animal analogue of obsessive-compulsive disorder. *Depress Anxiety* 1998;8:39–42.
106. Pryor PA, Hart BL, Cliff KD, et al. Effects of a selective serotonin reuptake inhibitor on urine spraying behavior in cats. *J Am Anim Hosp Assoc* 2001;219:1557–61.
107. Dehasse J. The use of sertraline in dog behaviour medicine. Vancouver: Proceedings of the 3rd International Veterinary Behavior Meeting, UFAW; 2001. p 195–6.
108. Reist C, Nakamura K, Sagart E, et al. Impulsive aggressive behavior: open-label treatment with citalopram. *J Clin Psychiatry* 2003;64:81–5.
109. Sherman BL, Mills DS. Canine anxieties and phobias: an update on separation anxiety and noise aversions. *Vet Clin North Am Small Anim Pract* 2008;38:1081–106.
110. Preskorn HS, Harvey AT. Cytochrome P450 enzymes and psychopharmacology. Available online at: <http://www.acnp.g4/gn401>
111. Indiana University Division of Pharmacology. Available online at: <http://medicine.iupui.edu/clinpharm/ddis/table.asp>
112. American Family Physician. Clinical pharmacology. Cytochrome P450. New nomenclature and clinical implications. Available online at: <http://www.aafp.org/aafp/980101ap/cupp.html>
113. Trepanier LA. Cytochrome P450 and its role in veterinary drug interactions. *Vet Clin Small Anim* 2006;36:975–85.
114. Gruen ME, Sherman BL. Use of trazodone as an adjunctive agent in the treatment of canine anxiety disorders: 56 cases (1995–2007). *J Am Vet Med Assoc* 2008;233:1902–7.
115. Cahill C. Mirtazapine as an antiemetic. *Vet Forum* 2006;23:34–6.
116. Plumb D. *Plumb's veterinary drug handbook*, 7th ed. Iowa: Wiley-Blackwell Publishing, Ames; 2011.
117. Quimby JM, Gustafson DL, Samber BJ, et al. Studies on the pharmacokinetics of mirtazapine in healthy young cats. *J Vet Pharmacol Ther* 2011;34:388–96.
118. Quimby JM, Gustafson DL, Lunn KF, et al. Pharmacokinetics of mirtazapine in cats with chronic kidney disease. *J Vet In Med* 2010;24:768.
119. Quimby J. Mirtazapine use in cats. AAEP rounds. Available online at: <http://www.vin.com/Members/CMS/Rounds/Current.aspx?id=1261&said=12> Veterinary Information Network, February 21, 2011.
120. Gwaltney-Brant SM, Albretsen JC, Khan SA. 5-Hydroxytryptophan toxicosis in dogs: 21 cases (1989–1999). *J Am Vet Med Assoc* 2002;193:7–40.
121. Schneider B, Dodman NH, Maranda L. Use of memantine in treatment of canine compulsive disorders. *J Vet Behav* 2009;4:118–26.
122. Wald R, Dodman N, Shuster L. The combined effects of memantine and fluoxetine on an animal model of obsessive-compulsive disorder. *Exp Clin Psychopharmacol* 2009;17:191–7.
123. Dodman NH, Shuster L, Nesbitt G, et al. The use of dextromethorphan to treat repetitive self-directed, scratching, biting or chewing in dogs with allergic dermatitis. *J Vet Pharmacol Therap* 2004;27:99–104.
124. Minkeviciene R, Banerjee P, Tunila H. Cognition-enhancing and anxiolytic effects of memantine. *Neuropharmacology* 2008;54:1079–85.
125. Kukanich B, Papich MG. Plasma profile and pharmacokinetics of dextromethorphan after intravenous and oral administration in dogs. *J Vet Pharmacol Ther* 2004;27:337–41.
126. Goddard AW, Brouette T, Almai A, et al. Early coadministration of clonazepam with sertraline for panic disorder. *Arch Gen Psychiatry* 2001;58:681–6.

Recommended reading

Crowell-Davis SL, Murray T. *Veterinary psychopharmacology: an introduction*. Hoboken, NJ: Wiley-Blackwell; 2005.

Dodman NH, Shuster L, editors. *Psychopharmacology of animal behavior disorders*. Oxford: Blackwell Science; 1998.

Papich MG. *Saunders handbook of veterinary drugs*, 3rd ed. St Louis, Missouri: Elsevier; 2011.

Plumb D. *Plumb's veterinary drug handbook*, 7th ed. Ames, Iowa: Wiley Blackwell Publishing; 2011.

Stahl SM. *Stahl's essential psychopharmacology*, 3rd ed. Cambridge: Cambridge University Press; 2008.

Stahl SM. *The prescriber's guide*, 3rd ed. Cambridge: Cambridge University Press; 2009.

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Complementary and alternative therapy for behavior problems

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What is complementary and alternative veterinary medicine (CAVM)?

The holistic approach to medicine is designed to examine the whole pet, including the clinical signs (both physical and behavioral), environment, and relationship with the owner, and then to develop a lifestyle and treatment protocol based on the findings. Holistic thinking is centered on love, empathy, and respect, and that treatment modalities should utilize the most efficacious, least invasive, and least expensive and harmful path. However, this is not an approach that is unique to the field of complementary and alternative medicine, as this is how any caring and knowledgeable healthcare provider would practice. In the treatment of behavioral problems, an evaluation of all these factors is essential in making a diagnosis and developing an appropriate treatment plan. In addition, all aspects of veterinary

medicine should be held to the same high standards. This includes documenting safety and efficacy for all therapies used.

Current examples of CAVM include modalities such as acupuncture/acupuncture/acupressure, nutraceutical therapy, phytotherapy (herbal medicine), chiropractic, homeopathy, aromatherapy, Bach flower remedies, energy therapy, low-energy photon therapy, magnetic field therapy, and orthomolecular therapy. In-depth discussions of these individual forms of therapy are beyond the scope of this book.

Is alternative medicine safer and more effective?

In traditional medicine, those therapeutic modalities that have not been tested or proven effective using established scientific principles are viewed cautiously or even skeptically.

This seems prudent and does not imply that the therapy is not of value. Ideally, all medicaments and therapeutic modalities used in animals should be subject to the same stringent criteria for safety and effectiveness. In fact, if a drug or supplement has not been tested against placebo, has the potential for toxicity, or is used as an alternative to a proven effective drug, this may pose a greater risk to the pet and lead to higher expense for the owner (the antithesis of holistic practice). Over the years, new standards have been set for the safety and efficacy of drugs and supplements so that the unproven, ineffective, and perhaps even dangerous tonics and practices of the past have been replaced by medicaments and techniques that have proven to be safe and effective. Yet, many of the alternative remedies have been revived from civilizations and centuries where knowledge of anatomy, physiology, cellular biology, genetics, disease processes, and even pathogens was virtually unknown.

This is by no means a condemnation of the many complementary modalities now available. In time, some will prove to be effective while others will prove to be ineffective or even harmful. Conventional practitioners must therefore remain cognizant of the potential benefits of complementary medical therapies, while complementary practitioners must validate the therapeutic effects of their treatment protocols. In the field of behavioral medicine, placebo effects of 50% or higher are not unusual (see [Chapter 8](#)). Therefore any supplement or medication, whether pharmaceutical, herbal, or homeopathic, that has not been subjected to an objective validated scoring system or has not been proven statistically superior to placebo should be considered untested or unproven with respect to efficacy. This has already sealed the fate of numerous highly promising drugs that did not meet safety or efficacy requirements when subjected to vigorous testing. Conversely, nonprescription treatment modalities that have not been validated continue to thrive.

In behavioral medicine, the treatment program must include behavioral modification and environmental management techniques that identify and address both the underlying cause as well as perpetuating factors. Therefore, regardless of whether a drug or complementary form of treatment is utilized, a holistic approach is needed to address all the issues that may have an impact on the pet's behavior (i.e., health, nutrition, environment, and behavioral management).

Naturopathic therapy

Supplementation is a popular topic amongst owners, breeders, and veterinarians but there are many misconceptions and myths that need to be addressed and corrected. One of the reasons for supplementing diets is that the known requirements are not necessarily the same as the actual requirements. This was forcefully demonstrated to the cat food industry in 1975, when it was determined that cats require higher levels of taurine than were present in commercial diets at that time.

There is another use for supplements that is often forgotten in the debates between owners, breeders, pet food companies, and veterinarians – some dogs and cats respond to supplements even if there is no dietary deficiency. This is

because some nutrients have positive pharmacologic benefits apart from their nutritional claims.¹

It is the concept of nutritional therapeutics that often creates a brick wall between conventional medicine and those practitioners who seek out more natural alternatives. Of course, there need be no wall at all. There is more than enough room in healthcare for both perspectives. We are now rediscovering some basic facts about nutritional therapy that today are making headlines – fiber can help prevent colon cancer; fresh vegetables can help prevent heart disease; St. John's wort may help treat depression. We sometimes forget that aspirin (acetylsalicylic acid) was originally derived from the bark of willow trees or that digitalis comes from the foxglove plant. Even the potent cancer drug taxol was first isolated from the Pacific yew tree. In fact, many of the most popular drugs used today were originally isolated from nature rather than being created in a laboratory.

By law, in order to achieve licensing, veterinary drugs must be proven to be safe and efficacious by government agencies, such as the Food and Drug Administration, Center for Veterinary Medicine (FDA-CVM) in the USA, the Bureau of Veterinary Drugs in Canada, and the European Food Safety Authority and the European Medicines Agency in Europe.

In addition, toxicity, contraindications, drug interactions, and the potential for side-effects must be established. Products that are sold as supplements or natural remedies that do not make claims with respect to health or disease can be sold in most countries in the absence of these same safeguards. However, when botanical and nutraceutical products are used as therapeutic agents, they are indeed being used with therapeutic intent, yet there are no regulations or assurances with regard to product quality, efficacy, tolerance, and safety.

Perhaps the biggest concern with botanicals and nutraceuticals is that there is no protection against substandard products. In addition, there is no standardization between competitive products, and there may even be variation between batches. The different species and different plant parts may vary considerably in their biochemistry and effectiveness, even varying on a seasonal basis. Only relatively recently have companies sought to standardize doses based on active ingredients for some of their products, and reflect this on the label. Yet, independent studies continue to find great ranges in active ingredients from well below to well above the manufacturer claims. In some instances, these products can be found to contain none of the active ingredients listed on the label.

Toxic contaminants are another concern with these products. For example, eosinophilia-myalgia syndrome has been reported in humans due to contaminants in commercially available 5-hydroxytryptophan, which was being promoted for insomnia, depression, and headaches after tryptophan was banned. A number of Canadians developed nausea and vomiting when their dandelion root product was found to contain buckthorn bark. In 2007 the FDA recalled 12 Chinese herbal products containing ephedra, aristolochic acid, and human placenta (www.fda.gov). A 2007 study evaluating Chinese herbs in New York City's Chinatown found nine different western pharmaceuticals in five samples.² Another risk is that many people put a great deal of trust in these products because they are "all natural," yet their side-effects,

contraindications, and toxicity may exceed that of comparable prescription drugs.

As mentioned, placebo-controlled studies are generally lacking to prove the efficacy of many of these alternative products and therapies, and some recent studies are finding little therapeutic effect for herbal remedies such as ginseng. Perhaps what is most surprising is that a drug that has met the requirements for efficacy and safety by the FDA is then passed over in favor of a nutraceutical product that is untested and unregulated, just because it is labeled as “natural.” Combination products with a variety of herbal extracts are also available, which may further cloud the true effectiveness of any one particular agent.

Finally, the issue of how to dose and how much to dose has yet to be established for most herbal medicinals in animals. Literature on the use of these alternative medicines suggests that no standard method of dosing exists, that trial and error will be needed to find correct dosages, and that most dosages are based on the human dose (which is based on a 68-kg (150-lb) human male). Even if a dose were to be established, the environment in which the plant grows, the part of the plant used, the age of the plant at harvest, handling after harvest, and the method of administration may all affect dose and efficacy.

Greater study on the pharmacognosy of these plants is needed, and the information to be made available to health-care professionals. Expect that some naturopathic remedies will eventually become mainstream medications once their active ingredients have been determined, and safe doses established and standardized.

Herbal therapy (phytotherapy) and nutraceuticals

While there are numerous personal claims of efficacy for phytotherapy, most “natural” therapeutics lack evidence of efficacy beyond case reports and anecdotal evidence (level 4 or 5 evidence). More recently however, a number of veterinary products with nutraceutical or herbal ingredients have been tested in either clinical or laboratory trials or both (see [Chapter 10](#) for details). Unlike pharmaceuticals, nutraceutical and herbal products can be brought to market as long as they demonstrate little or no toxicity and make no label claims of efficacy. Therefore, even those “natural” products that have data to support their efficacy are unlikely to have been subjected to the rigors (and cost) that would be required for FDA pharmaceutical licensing.

Practitioners will need to examine the quality of evidence before prescribing or recommending these supplements. Because of the power of the placebo effect (see [Chapter 10](#)), especially in the field of veterinary behavior, products that have not yet been assessed using acceptable scientific methods should be used only with client consent and full disclosure of the evidence, if any, to date.

Dosing

For human products, a calculation can be made by taking the adult human male dose and dividing by 68 to achieve a per-kilogram dose or dividing by 150 to achieve a per-pound dose. As absorption and metabolism may vary greatly

between dogs, cats, and humans, this method of dose calculation may lead to inefficacy or additional potential for toxicity, so close patient monitoring is essential. There can be no assurance that calculating a per-kilogram or per-pound dosage on the basis of recommendations for adult humans will be safe or effective in dogs and cats.

Veterinary nutraceuticals and therapeutic supplements

Cognitive enhancement and SAME

Products and diets for enhancement of cognitive function in senior pets are discussed in [Chapter 13](#). Although some products, such as S-adenosyl-L-methionine (SAME), and apoequorin may contain a single active ingredient, many of the cognitive supplements and diets are combinations of antioxidants, mitochondrial cofactors, fatty acids, and other ingredients that might collectively improve the signs or slow the progress of cognitive dysfunction. These include ginkgo biloba, resveratrol, phosphatidylserine, choline, phosphatidylcholine, alpha-lipoic acid, carnitine, omega-3 fatty acids, vitamins C, E, and B₆, as well as flavonoids and carotenoids from fruit and vegetables. In humans, SAME has been purported to improve depressive states.³ In veterinary behavior it might also be used to augment therapy with selective serotonin reuptake inhibitors (SSRIs) or tricyclic antidepressants (TCAs)⁴ (see [Chapter 13](#) for more details). Yet, SAME might increase serotonin levels; therefore, cautious monitoring for signs of serotonin toxicity when combining SAME with drugs that might increase serotonin is indicated ([Chapter 8](#)).

L-theanine

L-theanine can be found in a number of veterinary products for treatment of canine and feline anxiety. L-theanine is a product that is naturally found in green tea and may increase gamma-aminobutyric acid (GABA), an inhibitory neurotransmitter, and block glutamate (excitatory neurotransmitter). Anxitane (Virbac Animal Health) is a purified L-theanine product (Suntheanine) in a palatable tablet that may be useful in the treatment of fear and anxiety in dogs (including noise aversion, travel anxiety, and fear of people and other dogs) and in urine marking and avoidance behaviors in cats. Its efficacy has been assessed in both clinical and laboratory studies. In one study, dogs with noise phobias had a greater improvement with Anxitane plus behavior therapy than with behavior therapy alone.⁵ In a pilot trial in cats, emotional disorders, including signs of inappropriate elimination, fear aggression, fear of humans, and physical manifestations of anxiety, showed improvement after 30 days.⁶ In addition, in a controlled laboratory trial of dogs displaying fear and avoidance of humans, after 8 weeks Anxitane-treated dogs had significantly improved measures of human approach and interaction compared to placebo, with no evidence of sedation. There have been no reported side-effects or drug interactions.⁷ Improvement is likely to be seen in 2–4 weeks. The label dose is 25 mg every 12 hours for cats and dogs up to 10 kg, 50 mg every 12 hours for dogs up to 25 kg, and 100 mg every 12 hours for dogs over 25 kg.

Alpha-casozepine

Alpha-casozepine is a trypsin hydrolysate of the bovine milk protein, alpha-S1 casein. It is presently available in Europe (Intervet Schering Plough) and Canada (Vetoquinol) as Zylkene and as a supplement to a new diet Royal Canin Calm Canine and Feline. Similar ingredients may also be added to diets (caseinate hydrolysate) or found in combination supplements, typically at lower strengths. The starting dose is 15 mg/kg once daily with efficacy expected in 2–4 weeks. In some cases higher doses (up to 25 mg/kg) and longer treatment (up to 2 months) might be required to achieve maximal effect. In one study it was equally effective as selegiline in reducing anxiety in dogs over a period of 60 days based on EDED scoring (see Chapter 22).⁸ In a placebo-controlled study in cats, combined with behavior modification, after 56 days alpha-casozepine significantly improved fearful and anxious behavior compared to placebo based on a cat emotional scoring scale.⁹ In addition, in a recent study with a diet containing caseinate hydrolysate, when comparing anxious to nonanxious dogs in a laboratory environment, some clinical signs improved and cortisol was significantly decreased in anxious dogs fed the supplemented diet.¹⁰

Melatonin

Melatonin is an indolamine derivative of serotonin that may inhibit dopamine. Production is primarily within the pineal body and may decline with age. The hormone is secreted into the blood and cerebrospinal fluid at high levels during the night and at low levels during the day. Melatonin has a time-keeping function in many mammals and appears to adjust the timing of circadian rhythm information transmitted from the suprachiasmatic nucleus of the hypothalamus to entrain physiologic rhythms. It may increase serum prolactin and growth hormone; in the long term it may reduce luteinizing hormone. A true physiologic role for melatonin in humans has yet to be clearly established. It may decrease free radical production, reduce central nervous system excitability, and potentiate GABA.¹¹ Although controlled studies are lacking, it has been reported to be useful for jet lag and sleep disorders in people.¹² Side-effects in humans may include sleepiness, headaches, and gastrointestinal discomfort.

Melatonin may be useful in pets to treat canine alopecia-X in Nordic breeds, canine-pattern baldness, or canine recurrent flank alopecia.¹³ Although the mechanism of action is not well understood, it may have direct effects on the hair follicle or alter the secretion of melanocyte-stimulating hormone.¹⁴ Melatonin has been reported to be useful in the treatment of anxiety, fear of fireworks and thunder, and sleep cycle disorders in dogs and cats. In one case report, melatonin in conjunction with amitriptyline and behavior modification was used to treat fear and thunder phobia successfully; a dose of 0.1 mg/kg has been suggested.¹⁵ A titrated dose ranging from 1.5 to 3 mg in small dogs to 6–12 mg in large dogs either as needed or divided bid has also been used. In cats the dose may range from 1.5 to 3 mg as needed to as high as 6 mg bid.

Tryptophan

Tryptophan is an amino acid precursor in the production of serotonin. Lower levels of tryptophan in the diet have been

associated with a fall in serotonin levels that might be associated with impulsivity, sleep disturbances, and mood and memory alterations. In humans, a few small studies have found that tryptophan and 5-hydroxytryptophan may alleviate symptoms of depression, but further studies on efficacy and safety are required. Therefore it has been suggested that tryptophan supplementation might be effective in enhancing mood and memory and treating impulsive behavior in pets. After one small study with reduced protein and tryptophan showed a clinical improvement, more recently additional small studies and a new food with tryptophan supplementation, recently studies of tryptophan supplementation mented with tryptophan showed benefits. However more recently a diet with tryptophan supplemented at an increased ratio to other large amino acids (Royal Canin Calm Canine and Feline) in combination with other natural anxiolytics, have renewed interest in the effects of diet on behavior (see Chapter 10).

Tryptophan supplementation might be useful as augmentation therapy to increase the serotonin pool in pets where clomipramine or SSRIs do not achieve an adequate clinical response. However, these combinations should be monitored cautiously for signs of serotonin syndrome. Eosinophilia-myalgia syndrome has been reported in humans with 5-hydroxytryptophan supplementation, possibly due to contaminants.¹⁶ In addition, ingestion of toxic doses of 5-hydroxytryptophan has been reported in dogs with signs resembling serotonin syndrome (seizures, tremors, depression, hyperthermia, gastrointestinal upset, and death).¹⁷

Herbal therapeutics

Harmonease

Harmonease chewable tablets (VPL, Phoenix, AZ) are a proprietary blend of extracts of *Magnolia officinalis* and *Phellodendron amurense* for the treatment of stress-related behaviors in dogs. The active botanical ingredients in the extracts in Harmonease have been identified as honokiol, magnolol, and berberine, each of which has demonstrated anxiolytic properties in people, rodents, chicks, and dogs. In pilot studies involving kennel dogs, daily treatment for 6 days resulted in a reduction of fear and anxiety-induced behaviors, such as licking, spinning, and cowering. Using a laboratory model developed by CanCog Technologies (www.cancog.com) of noise-induced anxiety where dogs display increased inactivity when exposed to a storm recording, dogs placed on Harmonease for 6 days had significantly less inactivity than the placebo group.¹⁸

Kava kava

The active agents of kava (the rhizome of the pepper plant *Piper methysticum*) are known as kava lactones or kava pyrones, which may potentiate GABA receptors to provide an effect similar to benzodiazepines for mild anxiety without causing drowsiness. Based on a number of relatively small studies in humans, kava appears to be an effective treatment for human anxiety, although more rigorous trials and long-term safety studies are needed.¹⁹ In humans, kava has been used as a muscle relaxant, sleep aid, and anxiolytic. In pets

there have been no controlled studies; however, based on studies in humans and other species there appears to be potential for efficacy for the treatment of fear, anxiety, and phobias in dogs, irritable aggression, anxiety-related feline housesoiling, and for behavioral disorders associated with self-trauma in dogs and cats such as tail chasing, psychogenic overgrooming, and perhaps hyperesthesia.²⁰ It may also be useful for sleep disturbances. Based on a human dose of 100–200 mg of kava lactones per day, a canine dose might range from 12.5 mg for a small dog to 50 mg in a large dog. In humans, chronic use can cause rashes (kava dermatopathy). Combining kava with other antianxiety drugs, including antidepressants, anxiolytics, and sedatives, should be avoided. However, of greatest concern were reports of hepatic failure in humans that resulted in removal of the supplement from distribution in some countries. Although the problem was rare and likely idiosyncratic, caution should be used in monitoring liver enzymes if kava is dispensed.

Passiflora extract

Passiflora incarnata (wild passionflower, maypop, apricot vine, granadilla, passion vine) extract is prepared from dried leaves, stems, and flowers. The main constituents of the extract are flavonoids and glycosides. Passion flower is available in a number of homeopathic remedies and has been used as an herbal remedy for its alleged sedative and anxiolytic properties and as a sleep aid. Studies have demonstrated improvement with *Passiflora* equivalent to benzodiazepines in the treatment of anxiety, with less drowsiness, but results were not statistically significant and more studies are required to permit any conclusions on efficacy.¹⁹ In animals, *Passiflora* might be useful for agitation and anxiety, but no controlled studies are available. There are no known toxicities or contraindications yet reported.

St. John's wort

The active ingredient in St. John's wort (*Hypericum perforatum*) is found in the aerial parts, including the buds and flowers at the start of the blooming season. It has been recommended for use in humans for anxiety, sedation, obsessive-compulsive disorders, and as an antidepressant. While early studies in Europe identified improvement over placebo using St. John's wort for the treatment of mild depression, more recent studies found it to be no more effective than a placebo in treating major depression.²¹ Recently a meta-analysis of St. John's wort concluded that it was superior to placebo for major depression, and might have similar efficacy to standard antidepressants in humans.²² Although it has been claimed to have a monoamine oxidase (MAO) inhibitor-like effect, such inhibition appears to be quite mild. Enhancement of extracellular levels of serotonin, norepinephrine, dopamine, and glutamate may be due to reuptake inhibition.

The main cautions to the use of St. John's wort are the wide variability in formulation, stability, and lack of standardization, which leads to issues of dosage and efficacy. In addition, there is the risk of drug interactions. St. John's wort should not be used concurrently with SSRIs, TCAs, or MAO inhibitors such as selegiline.²⁰ In addition it should be used cautiously or avoided in conjunction with any drug

that might enhance serotonin, such as buspirone, or the amino acid tryptophan. St. John's wort increases the expression of p-glycoprotein in the intestines, and is an inducer of cytochrome P450 3A4 and 1A2 which, with chronic use, could lead to decreased concentrations of cyclosporine, midazolam, alprazolam, tacrolimus, theophylline, and amitriptyline.²³ In addition, St. John's wort may inhibit cytochrome P450 2D6, leading to a decreased clearance of narcotics, dextromethorphan, propranolol, tramadol, phenothiazines, and trazodone (see Chapter 8).

In veterinary behavior therapy, the primary indications might be for those behaviors for which TCAs and SSRIs are dispensed, including compulsive disorders, urine marking, fears and phobias, and anxiety-related disorders such as separation anxiety. However because of dose and purity issues and a lack of clinical trials in pets, drugs such as fluoxetine and clomipramine for which there is evidence of efficacy are generally preferable. Potential side-effects are gastrointestinal (vomiting, diarrhea), neurological (fatigue, restlessness, depression), and photosensitivity, especially in light-skinned animals. A dose of 10 mg/kg tid or up to 500 mg for large-breed dogs, 250 mg for medium dogs, and 75 mg for small dogs has been suggested while 25–75 mg bid to tid might be considered in cats. As with pharmaceutical antidepressants, it can take 3–4 weeks or longer for St. John's wort to achieve therapeutic effect.

Valerian

Valerian, a herb derived from the roots of *Valeriana officinalis* and *V. wallichii*, has been used for its sedative and hypnotic effects in people. There are numerous potential active ingredients, and wide variability between commercial products due to seasonal variation in components. It is believed that valerian inhibits production of an enzyme that breaks down GABA, an inhibitory neurotransmitter. However, because it can potentiate the effects of barbiturates and benzodiazepines, it should be avoided in patients undergoing anesthesia. No other drug reactions or toxicities have yet been reported. There is some evidence that valerian or valerian hops combination has a modest hypnotic effect and may improve quality of sleep but several weeks may be required to achieve effect.^{24,25} Evidence to support its efficacy in the treatment of anxiety is lacking.¹⁹ Valerian may help pets to sleep through the night and might be useful alone or in combination with other psychotropic drugs in the treatment of fear aggression or redirected aggression toward other cats, or in car ride anxiety or noise phobias in dogs.²⁰

Skullcap

Skullcap comes from the leaves of *Scutellaria laterifolia* and *S. baicalensis* as a dried herb, liquid extract, or tincture which may possess sedative, antispasmodic, and anti-inflammatory effects. It may be useful for the treatment of insomnia, irritability, and nervousness in humans and perhaps as a sedative or for anxiety in pets. However, there are no controlled studies to indicate any behavioral therapeutic effects in humans or pets. Adverse effects have not been reported at therapeutic doses but high doses could lead to gastrointestinal disturbances, arrhythmias, confusion, seizures, and possible hepatotoxicity.²⁰

Hops

Hops (*Humulus lupulus*) is a climbing perennial vine used in people as a sedative and mild hypnotic.²⁰ When stored, it undergoes auto-oxidation to produce methylbutenol, which is sedating. Although the sedating effect of hops is mild, together with valerian it may have an enhanced hypnotic effect.²⁵ In addition a potent phytoestrogen has been isolated from hops which might aid in the treatment of estrogen-responsive incontinence. It appears to be nontoxic but there is the potential for enhancing the sedative effects of other drugs, and for occasional allergic reactions. One paper reports a malignant hyperthermia syndrome in dogs (of which four were greyhounds) after ingestion of beer hops.²⁶ Hops may be useful for calming, increasing appetite, and for pets that wake at nights, but data to support its efficacy are lacking.

Panax ginseng

Ginseng refers to any of the species of the genus *Panax* that produce the adaptogens known as ginsenosides. *Panax ginseng* may be beneficial for enhancing cognitive performance. In humans it has also been used for inappetence, anxiety, insomnia, fatigue, and to improve concentration.²⁰ Ginseng may improve cognitive dysfunction through stimulation of acetylcholine and nicotinic receptors and as a free radical scavenger. In combination with ginkgo biloba, memory and attention tasks might be improved. While there appears to be some beneficial effect on cognition, behavior, and quality of life, there is no high-quality evidence for efficacy in patients with dementia.¹⁹ Ginseng may also have anticoagulant effects. Side-effects may include hypertension and gastrointestinal signs. For pets, ginseng might be useful for its anxiolytic effects or to enhance cognitive function in senior pets but there have been no efficacy studies to date.

Catnip

Catnip or catmint produces an apparent euphoric or hallucinogenic reaction in some cats. It exerts its influence on the central nervous system through the olfactory bulb that is not blocked by obliteration of the vomeronasal (VNO) organ. The active ingredient in catnip (*Nepeta cataria*) is the essential oil nepetalactone, with the active ingredient being nepetalic acid. It is available as a leaf, but liquid and aerosol forms are also available. Volatile oils appear to exert a cholinergic effect, which may account for some psychoactive properties. An opioid mechanism is also suspected.²⁰ Catnip produces a response in about 50–75% of cats. When these cats sniff even a small amount of catnip, they may begin to head shake, lick, chew, or rub up against the catnip, and then to twitch, salivate, and roll on the ground, for up to 15 minutes. The response resembles elements of playful, predatory, and sexual behaviors. Catnip responsiveness is reported to be an autosomal dominant trait, beginning at about 8 weeks of age. It can be used as a reward or for counterconditioning for cats as well as to provide an additional opportunity for environmental enrichment for cats that have a positive response. Supplementation is not without risk, and catnip intoxication has been reported.²⁷

Combination therapeutics

A number of supplements are available on the veterinary market that contain one or more nutraceuticals, herbal preparations, or other dietary and nutritional supplements. Although it is possible that these products work additively or synergistically, evidence of efficacy and effective dose in pets may not be established and most therapeutic claims are based on theoretical or anecdotal evidence (levels 4 or 5).

Pheromone therapy

Pheromones are chemical substances that are important for social and sexual communication between members of a species. Compared to other natural substances there are extensive data on the applications and efficacy of pheromones in veterinary behavior therapy. In more recent research, many scientists seem to prefer to use the broader term of “semiochemicals” to describe the family of chemical mixtures involved in intra- and interspecific communication, while pheromones are chemical compounds that are excreted or secreted for communication between members of a species (encyclopedia.com). Appeasing pheromones, produced by the mother in the first few days after birth, play a role in the attraction and attachment of newborn to mother. Synthetically produced appeasing hormones appear to have a relaxing effect for both young and adults of a species.

Pheromones are detected in the VNO or Jacobson’s organ, which is part of the accessory olfactory tract. In most species, this organ is enclosed within a capsule formed by the vomer bone (or cartilage), found along each side of the nasal septum. In some species, including cats, the flehmen or gape response enhances the perception of sexual pheromones, by opening the incisive ducts and aspirating the pheromones into the VNO. In dogs, tonguing (flicking tongue against incisive papilla) and panting likely aid in the perception of pheromones. Pheromones bind to pheromone-binding proteins that are specific for that pheromone, which stimulate structures within the limbic system that either alter the pet’s emotional state (primers) or activate physiologic effects such as the release of hormones. Receptors are generally found only in the species that produces the pheromones; therefore they are a species-specific form of communication. Appeasing pheromones, produced by the mother in the first few days after giving birth, play a role in the attraction and attachment of the newborn to mother. Synthetically produced appeasing pheromones appear to have a relaxing effect for both young and adults of a species. In clinical applications they can be used alone or, since there is no systemic absorption, they can be used safely with any other drug or supplement. In addition, because pheromones have no known toxicity or side-effects, and are delivered by diffuser or spray to the environment for dogs and cats or through slow release from a collar in dogs, owner compliance and acceptance are enhanced.

The F3 fraction of the feline facial pheromone is deposited by the cat throughout the environment by facial rubbing. It serves to mark boundaries of passageways and provide for emotional stability, perhaps by indicating known objects

from unknown.²⁸ Its absence likely creates an increase in anxiety. Synthetic analogs, such as Feliway, are recommended for the control of stress, anxiety, urine marking, vertical scratching, loss of appetite, reduced desire to play, and reduced interest in social interactions.

Synthetic F3 pheromone may be effective in reducing marking and anxiety when introducing cats into new environments and for traveling.^{29–33} In a recent meta-analysis of 10 studies in nine publications that evaluated pharmacotherapy or pheromonotherapy for urine marking in cats, there was a significant ($P < 0.001$) association between the use of any intervention and the number of cats that ceased or reduced urine spraying by at least 90%.³⁴ Analysis by intervention type indicated that fluoxetine, clomipramine, and pheromonotherapy may each assist in managing urine spraying beyond a placebo-based intervention.³⁴ In addition, F3 pheromone can reduce anxiety associated with veterinary clinic visits, and might be a useful adjunctive therapy to reduce stress-induced medical and behavioral issues such as interstitial cystitis.^{35–37} Feliway is available as a plug-in diffuser (i.e., plugs into an electrical outlet) that diffuses pheromone into an environment of 50–70 m² (approximately 650 ft²) for approximately 30 days. At least one diffuser should be used per floor or separate airspace. It is also available as a spray which can be placed directly on sites to reduce marking (urine spraying, scratching) or sprayed onto a towel or surface (e.g., cat carrier, car, veterinary cage) about 15–30 minutes in advance and repeated every 1–2 hours if necessary.

Another synthetic feline facial pheromone containing the F4 analog, Felifriend, is a pheromone that is associated with familiarization and allomarking in cats. Preliminary studies indicate that it might be useful for introducing a new cat to a resident cat, or introduction of cats to dogs, or unfamiliar people such as visitors, or veterinarians.^{38,39} At present the product is only available in a limited number of countries in Europe and Japan, in a spray designed to be applied to the individual to whom fear is being exhibited.

Another pheromone, a synthetic analog of the feline interdigital pheromone, has been shown to increase frequency of scratching on a scratching post compared to placebo; in addition, cats scratched more quickly when the feline interdigital pheromone was sprayed onto a scratching post in comparison to catnip.^{40,41} The commercial product (Feliscratch), for the prevention and reduction of scratching problems in kittens and cats, is not available at the time of writing. Preliminary studies have also begun on a Cat Appeasing (Mammary) Pheromone.

Dog-appeasing pheromone is found in the sebaceous glands between the mammary chains of lactating females. Its function is to calm and reassure (appease) the offspring.²⁸ The effects of the appeasing pheromones may be more subtle than with feline facial pheromones so that concurrent behavior modification will generally be required to achieve a successful outcome and to prevent relapse. A synthetic version, Adaptil (formerly DAP) is recommended for the prevention, control, and management of fear and/or stress-related behaviors, including separation anxiety, destruction, vocalization, housesoiling, excessive licking, and phobias (fireworks, thunderstorms). It is available as a spray and diffuser as well as a dog collar that releases the pheromone for 30 days.

The DAP diffuser has been effective in helping puppies adapt to a new home, reducing anxiety in puppy classes, veterinary clinics, and shelters and for separation anxiety and fear of fireworks (when combined with behavior modification).^{42–47} In a placebo-controlled study of DAP spray on postsurgical behavior, there was greater alertness and visual exploration after surgery and a smaller decline in serum prolactin.^{48,49} The spray and collar were both effective in improving car travel anxiety.^{50,51} The collar has also been shown to reduce fear and anxiety and improve learning and long-term socialization compared to placebo when used in puppy classes.⁵² The new Adaptil collar contains a higher concentration (5%) of the pheromone. In another placebo trial, newly adopted puppies displayed less nuisance behaviors, fear, and distress over the first 2 weeks.^{49,53}

Recently two new cat and dog-appeasing pheromone collars (nurtureCalm24, Meridian Animal Health) have been developed that are reported to last 60 days, although the source of pheromone in each collar is not clear. Efficacy is supported to date only by unpublished company-commissioned clinical studies and case reports.⁵⁴

Aromatherapy

Aromatherapy uses volatile oils to bring about psychological or physiological response. Oils can be administered by nebulization, topical application, and occasionally orally. Essential oils are obtained from the flowers, buds, fruits, leaves, bark, roots, or seeds of plants. Aromatherapy with lavender (or perhaps chamomile) might be effective for reducing anxiety during car rides and in kennel dogs; while peppermint and rosemary might enhance mental stimulation.^{55,55a} In another study, topical application of lavender oil on the pinna of a dog's ear was found to lower heart rate, possibly due to vagal stimulation;⁵⁶ In human dementia, although aromatherapy was found to be effective at reducing agitation in one trial, further randomized controlled trials are needed to be more conclusive.¹⁹

In behavior therapy, pairing neutral stimuli (including a scent) with a reflexive emotional response can lead to the development of conditioned stimuli. The odor (conditioned stimulus) can then evoke a variety of emotional responses that may be used to calm an anxious pet, or conversely may lead to anxiety if the odor has been paired with a painful or unpleasant stimulus. Since dogs have such a sensitive sense of smell, odors may become conditioned stimuli for a number of different responses and exploration of odors (e.g., on walks) may serve as a form of enrichment for some dogs.

Homeopathy

The basic principles of modern homeopathy were developed by an Austrian medical doctor, Samuel Hahnemann, in the mid-1800s. Homeopathy works on the principle of like cures like. Hahnemann purportedly based this system on the fact that quinine (used to treat malaria at the time) can produce malaria-like symptoms when given in overdose. The theory is that a product that would produce the same behavioral or physical symptoms in a healthy individual in large amounts can cure a patient's symptoms in small amounts. The

homeopathic remedy is prepared by repeatedly diluting the substance to render it nontoxic, while retaining its biologic value. In fact, each successive dilution is typically one part in 100, so that homeopathic potency is measured in centesimal Hahnemannianne. Between each dilution, the remedy is shaken vigorously. So, for example, a remedy that has had six successive dilutions (1 in 100) would be recorded as 6c (6cH in some countries) and would signify that the original substance has been diluted 1/1 000 000 000 000. If the dilutions had been one in 10, the potency is shown as 6x or D6. Although the amount of substance may be undetectable after dilution, the remedy is said to contain the vibrational energy essences that match the patterns present in the ailing patient.

These remedies may be made from plants, minerals, drugs, or animal substances. Although there is no scientific evidence to support any claims of efficacy, the extreme dilution of the ingredients is likely to render them entirely safe. The major difference between homeopathy and all other allopathic forms of therapy has to do with dose-related claims. In allopathic medicine, whether traditional western medicine or naturopathic therapy, ingredients given in more concentrated forms and dosages have proportionally more effect. In homeopathy, the remedies are believed to get stronger the more they are diluted and the less active ingredient provided. Thus, in homeopathy, a remedy of 30c is considered stronger than one of 6c, even though it is diluted to one part in 10⁴⁸!

A variety of homeopathic remedies have been suggested in the treatment of behavior problems. In theory, these would be specifically designed by a homeopathic practitioner for the needs of the individual pet (e.g., *Ignatia* or *pulsatilla* for separation anxiety, *Belladonna* or *Nux vomica* for aggression, *Calcarea phosphorica* for pica, *Aconitum napellus* for thunderstorm phobias, phosphorus for low generalized anxiety). However, commercial homeopathic combination preparations are also available. Calms Forte is a combination homeopathic remedy that has been sold as an alternative to psychotropic drugs in the treatment of nervous tension and insomnia.

All complementary forms of therapy, including homeopathy, must be evaluated by the same methods that science uses to evaluate all treatment modalities. To date, scientifically validated evidence of efficacy is lacking, as is a scientifically plausible biochemical mechanism of action for a compound that has been diluted to the point that it is highly likely that not a single molecule still exists.^{57,58} Recently two randomized placebo-controlled trials examined homeopathic remedies for canine noise phobias and there was no evidence of efficacy for the homeopathic treatment.^{59,60}

Bach flower remedies

A physician, Edward Bach, developed Bach flower remedies in the 1930s. They are intended to improve the emotional state of the human or pet, using minute dilutions of therapeutic plant essences. There are 38 essences, and up to five can be combined at once, supposedly to meet all of the animal's physical and behavioral needs. Each remedy is purported to correct a specific emotional upset, such as fear, pain, resentment, and possessiveness. Accordingly, these

remedies require that the practitioner/dispenser assess the pet's disturbed emotional state, such as timidity, jealousy, or despondency. Up to 12 remedies have been suggested for separation anxiety and up to 13 for fear and anxiety. The use of the appropriate combination of remedies involves determining how the animal reacts to certain stimuli and then targeting the treatment to the particular pet's needs (e.g., difficult if left alone versus panics if left alone). In addition to the lack of data to substantiate the efficacy of any of these remedies, the ability to categorize a pet's emotional state at so fine a level seems entirely subjective and arbitrary, even for the most skilled of behaviorists. Other combinations have been purported to control urine spraying, aggression between pets, carsickness, stress-induced cystitis, fear, and grieving. Rescue Remedy is a combination of five of Bach's flower essences that has been sold for the immediate or acute treatment of stressful and anxious events. It is intended to comfort and counter panic. Despite the lack of any data to support the efficacy of these products, they continue to gain popularity.

Acupuncture

Acupuncture involves piercing the skin with slender needles at predetermined acupuncture points, and then the manipulation of these points by needling, injection, ultrasound, laser, magnetic induction, or electrical stimulation. Acupuncture is said to stimulate the vital force (Qi) within the animal to bring about homeostasis and healing. Clinical abnormalities (disease, pain, behavior problems) are believed to be brought on by imbalances within the individual. This renders the individual susceptible to the effects of external influences such as pathogens and environmental toxins. Needling of acupuncture points is intended to bring about balance along the lines of energy called meridians. It is said to lead to alteration in neurotransmitter pathways. Brain-mapping studies have revealed correlation between acupuncture point stimulation and cortical activation. Although the primary indication for acupuncture would likely be pain management (see Chapter 6), it has also been purported to be effective in the treatment of respiratory, neurological, and gastrointestinal conditions, and behavior problems such as aggression, anxiety, behavioral anorexia, depression (especially with respect to grief), and compulsive disorders such as compulsive overgrooming in cats and acral lick dermatitis in dogs.⁶¹ It is purported to affect the serotonin system, and to be a faster and more effective form of therapy (three 15-minute treatments over 3–4 weeks). There are no controlled studies to show improvement of behavior problems with acupuncture. In addition, after an evaluation of 30 trials in the human literature, there was insufficient evidence that acupuncture can assist with the management of human depression.¹⁹

Therapeutic touch

Tellington Touch Equine Awareness Method (TTEAM) was originally developed by Linda Tellington Jones as a method of modifying behavior in horses to help them focus and learn. This was eventually modified to apply to all animals

and the physical manipulation technique known as Tellington Touch (TTouch) was introduced. TTEAM is intended to foster special connections between people and pets, and although there are numerous anecdotal reports of its effectiveness, there are no experimental data to support such effectiveness.

TTouch is a form of manipulation of the skin, as opposed to massage, which manipulates the muscles. It is intended to stimulate the nervous system (by activating different types of brain waves), using circular motions with the hands. In the veterinary hospital, the technique is purported to decrease pain, restore intestinal function following surgery, or relax the fearful pet. Wands (feathers) can be used to start, beginning with the least threatening area of the body, and this can then progress to direct manipulation when (if) the fear subsides and the pet becomes approachable.

While handling exercises, massage therapy, and relaxation exercises can be beneficial to the pet and its relationship with its owner, it is uncertain whether the specific exercises associated with TTouch have any added benefits.

In humans therapeutic touch is a form of energy medicine that includes reiki. In therapeutic touch the body, mind, and spirit form an energy field (biofield) which produces an aura which can be manipulated in the healing process by moving the hands a few centimeters over the body to find areas of congestion and move stagnant energy away (unruffling). In humans there have been no randomized or controlled trials showing efficacy of therapeutic touch for anxiety disorders.¹⁹

Magnetic field therapy

In this form of therapy, magnets are used to alter the energy fields of the individual. They can be applied directly to the individual, or used as bedding or sleeping mats. Their

primary indications are purported to be improvement of circulation and pain management. However, there are also claims that magnetic therapy can improve anxiety, stress, depression, and attention deficit hyperactivity disorder. There is no known mechanism of action, although transcranial stimulation is said to enhance serotonin metabolism. Magnets have also been used at acupuncture stress points. There are no studies to show improvement of behavior with magnetic field therapy in humans or pets.

Veterinary chiropractic

Chiropractic manipulation is intended to correct vertebral subluxations that may affect the innate vital force of the individual. Correcting the subluxation allows the force to express itself fully, thereby bringing about healing. Not only is manipulation intended to correct mechanical imbalances related to the neuromuscular consequences of subluxation, but it is also purported to improve a variety of physiologic conditions from diabetes to cancer as well as a variety of behavioral conditions. No studies have demonstrated that chiropractic is effective in the management of behavior problems in dogs and cats.

Music Therapy

Music (sounds) might also help to maintain a relaxed state. This would include music and sounds which the dog has learned to associate with relaxation (e.g. television). In addition, of a variety of music types and one acoustically designed recording, only the classical music resulted in calming while with heavy metal music there was an increase in barking and shaking.⁶²

References

- Ackerman L. Canine nutrition – what every owner, breeder and trainer should know. Loveland, Colorado: Alpine Publication; 1999.
- Miller GM, Stripp R. A study of western pharmaceuticals contained within samples of Chinese herbal/patent medicines collected from New York City's Chinatown. *Legal Med* 2007;9:258–64.
- Papakostas GI. The use of complementary and alternative medicines to achieve remission in major depressive disorder. *J Clin Psychiatry* 2009;70(Suppl. 5): 18–22.
- Reich M. S-adenosylmethionine: its use in veterinary behaviour. *ACVB/AVSAB Seattle Proceedings* 2009;8–9.
- Michelazzi M, Berteselli G, Minero M, et al. Effectiveness of l-theanine and behavior modification for treatment of phobias in dogs. *J Vet Behav* 2010;5:34–5.
- Dramard V, Kern L, Hofmans J, et al. Clinical efficacy of l-theanine tablets to reduce anxiety-related emotional disorders in cats: a pilot open-label clinical trial. *J Vet Behav* 2007;5:85–6.
- Araujo JA, de Rivera C, Ethier JL, et al. Anxitane tablets reduce fear of human beings in a laboratory model of anxiety-related behavior. *J Vet Behav* 2010;5:268–75.
- Beata C, Beaumont-Graff E, Diaz C, et al. Comparison of the effect of alpha-casozepine (Zylkene) versus selegiline hydrochloride on anxiety disorders in dogs. *J Vet Behav* 2007;2:175–83.
- Beata C, Beaumont-Graff E, Coll V, et al. Effect of alpha-casozepine (Zylkene) on anxiety in cats. *J Vet Behav* 2007;2: 40–6.
- Palestrini C, Minero M, Cannas S et al. Efficacy of a diet containing caseinate hydrolysate on signs of stress in dogs. *J Vet Behav* 2010;5:309–17.
- Spencer JW, Jacobs JJ. Complementary and alternative medicine: an evidence based approach, 2nd ed. St Louis, Missouri: Mosby; 2003. p. 198, 205, 266.
- Hersheimer A, Petrie KJ. Melatonin for prevention and treatment of jet lag (Cochrane review). In: *The Cochrane Library* 1. 2001.
- Ackerman L. Atlas of small animal dermatology. Buenos Aires: Inter-Medica; 2007.
- Plumb D. Melatonin. Plumb's veterinary drug handbook, 6th ed. Ames, Iowa: Blackwell Publications; 2008.
- Aronson L. Animal behavior case of the month. A dog was evaluated because of extreme fear. *J Am Vet Med Assoc* 1999;215:22–4.
- Klarskov K, Johnson KL, Benson LM, et al. Eosinophilia-myalgia syndrome case associated contaminants in commercially available 5-hydroxytryptophan. *Adv Exp Med Biol* 1999;467:461–8.
- Gwaltney-Brant SM, Albrechtsen JC, Khan, SA. 5-Hydroxytryptophan toxicosis in dogs: 21 cases (1989–1999). *J Am Vet Med Assoc* 2000;216:1937–40.

18. DePorter TL, Landsberg GM, Araujo JA, et al. Hormonease reduces noise-induced fear and anxiety in a laboratory canine model of thunderstorm simulation: a blinded and placebo-controlled study. In: *Proceedings of the ESCVE/ECVBM Annual Congress*, 2010.
19. The Cochrane Collaboration. Cochrane Reviews: <http://www.cochrane.org/cochrane-reviews>.
20. Schwartz S. Psychoactive herbs in veterinary medicine. Ames, Iowa: Blackwell; 2005;10–36. 51–55, 76–86, 109–127, 137–141, 263–274.
21. Hypericum Depression Study Group. Effect of *Hypericum perforatum* (St. John's wort) in major depressive order; a randomized controlled trial. *JAMA* 2002;287:1807.
22. Linde K, Mulrow CD, Berner M, et al. St John's wort for depression. *Cochrane Database Syst Rev* 2008 Oct;8(4): CD000448.
23. Goodman L, Trepanier L. Potential drug interactions with dietary supplements. *Compend Contin Educ Pract Vet* 2005;27:780–90.
24. Fernandez-San-Martin MI, Masa-Font R, Palacios-Soler L. Effectiveness of valerian in insomnia: a meta-analysis of randomized placebo controlled trials. *Sleep Med* 2010;11:505–11.
25. Morin CM, Koetter U, Bastien C. Valerian-hops combination and diphenhydramine for treating insomnia: a randomized placebo-controlled clinical trial. *Sleep* 2005;11:1465–71.
26. Duncan KL, Hare WR, Buck WB. Malignant hyperthermia-like reaction secondary to ingestion of hops in five dogs. *J Am Vet Med Assoc* 1997;210:51–4.
27. Hornfeldt CS. *Nepeta cataria* (catnip) 'poisoning' in cats. *Vet Pract Staff* 1994;6(1):7.
28. Pageat P, Gaultier E. Current research in canine and feline pheromones. *Vet Clin North Am Small Animals* 2003;33:187–211.
29. Frank D, Erb HN, Houpt KA. Urine spraying in cats: presence of concurrent disease and effects of pheromone treatment. *Appl Anim Behav Sci* 1999;61:263–72.
30. Hunthausen W. Evaluating a feline facial pheromone analogue to control urine spraying. *Vet Med* 2000;95:151–56.
31. Ogata N, Takeuchi Y. Clinical trial of a feline pheromone analogue for feline urine marking. *J Vet Med Sci* 2001;63:157–61.
32. Mills DS, Mills CB. Evaluation of a novel method for delivering a synthetic analogue of feline facial pheromone to control urine spraying by cats. *Vet Record* 2001;149:197–9.
33. Gaultier E, Pageat P, Tessier Y. Effect of a feline appeasing pheromone analogue on manifestations of stress in cats during transport. In: *Proceedings of the 32nd Congress of the International Society of Applied Ethology*, Clermont-Ferrand 1998; 198.
34. Mills DS, Redgate SE, Landsberg GM. A meta-analysis of studies of treatments for feline urine spraying. *PLoS ONE* 2011;6:e18448.
35. Cerissa A, Griffith CA, Steigerwald ES, et al. Effects of a synthetic facial pheromone on behavior of cats. *J Am Vet Med Assoc* 2000;217:1154–6.
36. Kronen PW, Ludders JW, Erb HN, et al. The F3-fraction of feline facial pheromones calms cats prior to intravenous catheterization. In: *Proceedings of the 7th World Congress of Veterinary Anaesthesia*, Berne, 2000. p. 71.
37. Gunn-Moore DA, Cameron ME. A pilot study using synthetic feline facial pheromone for the management of feline idiopathic cystitis. *J Feline Med Surg* 2004;6:133–8.
38. Patel G, Heath S, Coyne K, et al. Pilot study to investigate whether a feline pheromone analogue reduces anxiety-related behavior during clinical examination of cats in a rescue shelter. In: Heath S, editor. *Proceedings of the 7th International Veterinary Behavior Meeting*. ESVCe, Belgium, 2009, 93–5.
39. Bonnafous L, Lafont C, Gaultier E, et al. Allomarking pheromone (F4) analog (Felifriend) during medical examination. In: Mills D, Levine E, Landsberg G et al. editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, IN: Purdue University Press; 2005; p.119–22.
40. Cozzi A, Lecuelle L, Bougrat L, et al. The interest of the use of feline interdigital semiochemical to induce scratching in cat. *Proceedings of ACVB, AVSAB annual scientific session*. St. Louis, 2011, 22–4.
41. Pageat P, Bougrat L, Monneret P, et al. The effect of feline interdigital semiochemicals with primers in relation to scratching marking. *J Vet Behav* 2010;5:37.
42. Mills DS, Ramos D, Estelles MG, et al. A triple blind placebo-controlled investigation into the assessment of the effect of dog appeasing pheromone (DAP) on anxiety related behaviour of problem dogs in the veterinary clinic. *Appl Anim Behav Sci* 2006;98:114–26.
43. Tod E, Brander D, Wran N. Efficacy of a dog appeasing pheromone in reducing stress and fear related behaviour in shelter dogs. *Appl Anim Behav Sci* 2005;93:295–308.
44. Levine ED, Ramos D, Mills DS. A prospective study of two self help CD based desensitization and counter-conditioning programmes with the use of dog appeasing pheromone for the treatment of firework fears in dogs (*Canis familiaris*). *Appl Anim Behav Sci* 2007;105:311–29.
45. Taylor K, Mills DS. A placebo controlled study to investigate the effect of dog appeasing pheromone and other environmental and management factors on the reports of disturbance and house soiling during the night in recently adopted puppies (*Canis familiaris*). *Appl Anim Behav Sci* 2007;105:358–68.
46. Graham D, Mills DS, Bailey G. Evaluation of the effect of temporary exposure to synthetic dog appeasing pheromone (DAP) on levels of arousal in puppy classes. In: Landsberg G, et al. editors. *Proceedings of the 6th IVBM/ECVBM-CA. Fondazione Iniziative Zooprofilattiche e Zootechniche*, Brescia, IT, 2007, 133.
47. Gaultier E, Bonnafous L, Bougrat L, et al. Comparison of the efficacy of a synthetic dog-appeasing pheromone with clomipramine for the treatment of separation-related disorders in dogs. *Vet Rec* 2005;156:533–38.
48. Siracusa C, Manteca X, Cuenca R, et al. Effect of a synthetic appeasing pheromone on behavioral, neuroendocrine, immune, and acute-phase perioperative stress responses in dogs. *J Am Vet Med Assoc* 2010;237:673–81.
49. Gaultier E, Bonnafous L, Vignet-Legue D, et al. Efficacy of dog appeasing pheromone in reducing behaviours associated with fear of unfamiliar people and new surroundings in newly adopted puppies. *Vet Rec* 2009;164:708–714.
50. Gaultier E, Pageat P. Effects of a synthetic dog appeasing pheromone (DAP) on behaviour problems during transport. In: Seksel K, Perry G, Mills D, et al. editors. *Proceedings of the 4th IVBM, Caloundra, Australia. Post Graduate Foundation in Veterinary Science*, Sydney, 2003; 33–5.
51. Estelles MG, Mills DS. Signs of travel-related problems in dogs and their response to treatment with dog-appeasing pheromone. *Vet Rec* 2006;159:140–8.
52. Denenberg S, Landsberg GM. Effect of dog-appeasing pheromones on anxiety and fear in puppies during training its effects on long term socialization. *J Am Vet Med Assoc* 2008;233:1874–82.
53. Gaultier E, Bonnafous L, Vignet-Legue D, et al. Efficacy of dog-appeasing pheromone in reducing stress associated with social isolation in newly adopted puppies. *Vet Rec* 2008;163:73–80.
54. Hathaway-Gass D. Case presentation of the use of a pheromone collar in a cat. *Proc ACVB/AVSAB Symposium*, St. Louis, 2011, 22–24.
55. Wells DL. Aromatherapy for travel-induced excitement in dogs. *J Am Vet Med Assoc* 2006;229:964–7.
- 55a. Graham D, Wells DL, Hepper PG. The influence of olfactory stimulation on the behaviour of dogs housed in a shelter. *Appl Anim Behav Sci* 2005;91:143–53.
56. Komiya M, Sugiyama A, Tanabe K, et al. Evaluation of the effect of topical application of lavender oil on autonomic nerve activity in dogs. *Am J Vet Res* 2008;70:764–76.

57. Overall KL, Dunham AE. Homeopathy and the curse of the scientific method. *Vet J* 2009;180:141–8.
58. Bausell RB. Snake oil science. The truth about complimentary and alternative medicine. New York: Oxford University Press; 2007.
59. Cracknell NR, Mills DS. A double-blind placebo-controlled study into the efficacy of a homeopathic remedy for fear of firework noises in the dog (*Canis familiaris*). *Vet J* 2008;177:80–8.
60. Cracknell NR, Mills DS. An evaluation of owner expectation on apparent treatment effect in a blinded comparison of two homeopathic remedies for firework noise sensitivity in dogs. *J Vet Behav* 2011;6: 21–30.
61. Scott S. 1999/2000 Acupuncture and its role in behaviour therapy. *Companion Anim Behav Ther Study Group Newslett* Winter: 7
62. Wells DL, Graham L, Hepper PG. The influence of auditory stimulation on the behaviour of dogs housed in a rescue shelter. *Anim Welf* 2002;11:385–93.

Recommended reading

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|---|--|--|
| Allen JM. Herbal medicines and dietary supplements. <i>Skeptical Inquirer</i> 2001;25:36–46. | Fadda F. Tryptophan-free diets: a physiological tool to study brain serotonin function. <i>News Physiol Sci</i> 2000;15:260–4. | Wynn SG, Marsden S. <i>Manual of natural veterinary medicine science and tradition</i> . St Louis, Missouri: Elsevier; 2003. |
| Bauer JE. Evaluation of nutraceuticals, dietary supplements, and functional food ingredients for companion animals. <i>J Am Vet Med Assoc</i> 2001;218:1755–60. | Kogan LR, Schoenfeld-Tacher R, Simon AA. Behavioral effects of auditory stimulation on kennelled dogs. <i>J Vet Behav</i> 2012;7:268–75. | Wynn SG, Fougere B. <i>Veterinary herbal medicine</i> . St Louis, Missouri: Mosby Elsevier; 2006. |
| Beaubrin G, Grey GG. A review of herbal medicines for psychiatric disorders. <i>Psychiatr Serv</i> 2000;51:1130–4. | | |

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Feeding and diet-related problems

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The physiological influence of diet on behavior

It is important to realize that nutrients can impact the behavioral process in a number of intriguing ways. Since synthesis of neurotransmitters depends on the availability of circulating precursors (tryptophan for serotonin, choline for acetylcholine, and tyrosine for catecholamines), diet is likely to affect the availability of these precursors. However, the amount of nutrient ingested, its level in the brain, and its effect on nerve transmission are not linearly correlated. For example, the conversion of tryptophan to serotonin appears to be affected by the amount of carbohydrate in the diet (i.e., increasing serotonin release with increased carbohydrate) and the synthesis of serotonin might then decrease the amount of carbohydrate the animal wants to eat.

The innate feeding instincts of dogs and cats include both hunting (comprised of prey seeking, stalking, chasing, and the kill) and scavenging. These activities utilize energy and are a significant component of an animal's daily time budget. Studies have found that cats living exclusively outdoors might capture 10–20 small prey per day to satisfy their caloric requirements and that less than half of the capture events are successful.^{1,2} Similarly domestic cats eat many small meals over 24 hours. The dog on the other hand might spend a large proportion of its day exploring, scavenging, hunting, and catching. In addition, humans have selected for pointers, retrievers, terriers, and setters that can find, track, contain, retrieve, or hunt down prey. Therefore, behavior

problems are likely to arise if sufficient attention is not made to the feeding and hunting requirements that are natural for the species (and breed). Behavioral assessment should include an evaluation of whether the pet has sufficient outlets to display its natural repertoire of behaviors, including the time and activities that would normally be spent in food acquisition. Treatment might then require more stimulating, time-consuming, and natural ways for pets to feed. Although feeding live prey or dead carcasses is impractical, providing toys and feeders that require manipulation to release the food, utilizing search games where the pet has to find its food, training the pet to receive pieces of its food as a reinforcement for desirable behavior (i.e., training), or stuffing food in toys and freezing can increase the work required to obtain food rewards (see environmental enrichment in [Chapter 4](#)).

Dietary ingredients and behavior

It is not unreasonable to assume that some dogs and cats might have behavioral problems related to their diet, and that a change in diet might be a consideration when pets display abnormal behavior patterns such as aggression or difficulty in trainability.

While it is possible to have adverse food reactions that result only in behavioral changes, in most cases one would expect more diverse signs (e.g., dermatologic, neurologic, or gastrointestinal) if there were an adverse reaction to dietary

ingredients. An elimination diet (i.e., one that does not contain the suspected offending ingredients) could be used to test this hypothesis. However, pet owners cannot merely change to an alternative diet to test their suspicions, since this may not eliminate the offending ingredient.

Protein, carbohydrate, and tryptophan

Most concerns regarding diet and behavior focus on the role of protein, including quantity, quality, and processing. High-meat diets could conceivably result in lowered levels of the neurotransmitter serotonin in the brain, because of the high level of amino acids competing with tryptophan (from which serotonin is formed) for the carrier that transports amino acids across the blood–brain barrier. Low serotonin levels have been associated with aggression in some animals.³ Therefore, could a reduction in protein with concurrent supplementation with tryptophan lead to a reduction in aggression? Another suggestion is that a reduction in carbohydrate content and increased protein may lead to a decrease in excitability and overactivity. Studies that measure serotonin metabolites in the cerebrospinal fluid after ingestion of diets with a variety of protein levels in dogs have found no differences regardless of diet fed.⁴ In addition, the level of protein (high versus low) in the diet or addition of L-tryptophan appears to have no effect on fearfulness or hyperactivity.⁵ Yet, in a small population of dogs, low-protein diets were found to reduce territorial aggression.⁶ Other forms of aggression were unaffected. In a preliminary placebo-controlled study, supplementation with L-tryptophan led to a reduction of stress-related behaviors and a decrease in anxiety signals in both dogs and cats.⁷ Recently, a new diet Royal Canin CALM™ Canine and Feline with L-tryptophan, vitamin B6, alpha-casozepine (see [chapter 9](#)) and L-tryptophan (in an increased ratio to other large amino acids) has, in one study, demonstrated a reduced stress response (as measured by urine cortisol creatinine ratio) in response to nail trimming.⁸

Carbohydrate levels are another area of interest. It is believed that when high-carbohydrate diets are fed, tryptophan reaches the brain in higher amounts and results in the production of serotonin. This may have a calming effect on the animal, making it less aggressive. However, if the increase in carbohydrates is accomplished by decreasing protein in the diet, then this may be a contributing factor. Supplementing the diet with vitamin B₆ (pyridoxine) might also be beneficial, because this aids in the production of serotonin.⁸

Another concern, often posed by dog trainers, is that training problems are more common in dogs fed dry food than those fed a canned ration. If training problems related to dry rations exist, they would more likely be related to ingredients such as preservatives than low moisture content. Since canned food is heat-sterilized before packaging, preservatives are not needed. In dry foods expected to last for months on store shelves, many chemicals, especially antioxidants and flavor enhancers, must be added. Only recently has any scientific research focused on the effects of various components of the diet on behavior. It remains a very intriguing area of applied animal behavior. However, there is at present no evidence that preservatives or food coloring have any effect on behavior. Supplements that might be useful in the treatment of behavior problems are discussed in [Chapter 9](#).

Fatty acids

There has been renewed interest in the fatty acids and their effects on behavior. While the essential fatty acids (*cis*-linoleic acid in the dog and *cis*-linoleic acid and arachidonic acid in the cat) are, by definition, essential for life, attention has been focused recently on the long-chain omega-3 fatty acids, specifically docosahexaenoic acid (DHA) and, to a lesser extent eicosapentaenoic acid (EPA). DHA, while technically not considered essential, is important in neural and retinal development, neurotransmission, and protection against oxidative stress.⁹ EPA is an important anti-inflammatory agent that has been used primarily in the treatment of atopic dermatitis and for degenerative joint disease.¹⁰

Supplementation with DHA-rich dietary oils results in higher circulating levels of DHA,¹¹ which is important because this cannot be easily achieved with shorter-chain omega-3 fatty acids such as alpha-linolenic acid, especially after weaning.¹² Because of the inefficiency in converting alpha-linolenic acid to EPA and DHA, supplementing with the preformed dietary long-chain fatty acids, typically derived from fish oils, is preferred.¹³ There is considerable interest in the effects of supplementation of diets with DHA (and EPA) during gestation, lactation, and even in the postweaning period.¹⁴

In addition to retinal function and brain development, an improvement in the performance of memory and learning tasks, trainability, cognitive function, psychomotor function, immunologic, and problem-solving skills has been demonstrated in puppies with DHA supplementation.^{12,13} Therefore, there may be benefits for supplementing pet diets with DHA-rich fatty acids during gestation, lactation, the immediate postweaning period to 16 weeks of age, as well as in senior pets with cognitive dysfunction. DHA can be provided in diets specifically formulated for this purpose, or with appropriate dietary supplements.

Diagnosis of diet-related behavior problems

The hypothesis of high-protein, preservative-rich, dry diets or food ingredients contributing to behavior problems can be tested by feeding a trial diet for 7–10 days, watching for changes, and then challenging the patient with the original diet to determine if the problem recurs. Prior to trial with any new test diet, it is essential that there are no abnormalities on physical examination and that routine blood and urine tests are normal. In addition to low-protein trials, by using a homemade novel protein diet, preservatives and additives can be avoided and the single protein source may help to identify pets with adverse food reactions (although a trial for dietary allergy or intolerance may require 8 weeks or longer, and does require the selection of novel proteins only).¹⁵

When feeding a homemade low-protein diet for 7–10 days, the protein sources that are suitable include boiled chicken, lamb, fish, or rabbit combined with boiled white rice or mashed potatoes. This also limits problems that might occur from high-cereal diets (e.g., exorphines), milk proteins (e.g., casomorphine), and preservatives, but may not be hypoallergenic if one of the selected ingredients turns out to be the offending allergen. Therefore, if an adverse food reaction

is still a consideration, a completely novel protein source should be considered and the trial continued for a minimum of 8 weeks. The meal should be mixed as one part meat to four parts carbohydrate (one part meat to one part carbohydrate for the cat) and fed in the same amount as the regular diet. Suitable protein sources include novel game meats, ostrich, pinto beans, calamari, and catfish. Suitable carbohydrates for a hypoallergenic elimination diet trial include sweet potato, pumpkin, rice, and tapioca (cassava). Only fresh water should be provided during the trial, preferably bottled to control local water supply contaminants. No supplements, treats, or snacks should be given unless they are made of the same protein and carbohydrate sources as the diet.

This diet is not nutritionally balanced but should not be problematic for the 7–10 days in which the low-protein trial is being conducted. When testing for 8 weeks or longer in the evaluation of an adverse food reaction, a homemade diet is likely sufficient unless being fed to a puppy/kitten, or to pregnant or lactating animals. In these cases, a nutritionist should be consulted to formulate a diet that is nutritionally balanced while still being hypoallergenic for that specific animal. It is important to realize that some retail pet foods marketed as hypoallergenic have been found to contain known food allergens, so client compliance with veterinary recommendations is paramount to conducting a suitable elimination diet trial for adverse food reactions.¹⁶

If there is a response to the diet trial, it will then be necessary to determine whether specific ingredients in the food (proteins, additives, preservatives) or the relative content of ingredients (protein versus carbohydrate) are implicated in the changes in behavior. Therefore, the next step in a homemade protein-restricted diet trial, if there has been improvement, is to increase the protein content of the diet fed, to see if problems recur. If no change is noted, the next step is to challenge the pet with potential offenders. In a low-protein trial of 7–10 days, the next challenge should be with the original diet, to see if there is a recurrence of the behavioral problem. If so, this helps confirm that it is the ingredients that are contributory, rather than the total protein exposure. At this point a careful reassessment for medical problems such as hepatic encephalopathy may be warranted. If the behavior problem does not recur with the increase in protein, protein is unlikely to be a contributor to the problem.

Other options would be either to test the dog's response to protein levels by feeding a reduced-protein canned diet (e.g., prescription formulas designed for renal disease), which would provide a balanced restricted protein diet with no preservatives, or to use a prescription hydrolyzed protein or novel protein diet over 8 weeks to test for a food sensitivity/intolerance. For animals that respond to a hypoallergenic diet trial, a challenge with the original food is also needed at the trial's end. If there is no recurrence within 7–10 days, then an adverse food reaction is unlikely. If the problem does recur, then the trial should be reinitiated until the animal is controlled once again, and then individual proteins added every 7 days or so until the dietary culprits can be identified.

Some research has also focused on the use of biomarkers for diagnosis of behavior problems, particularly aggression. For example, dogs with social conflict-related aggression may have significantly lower serotonin levels and significantly

higher cortisol measures than control dogs.³ This doesn't yet allow us to predict which dogs will eventually become aggressive, those dogs that will best respond to drug therapy, or even allow a diagnosis of aggression in dogs, but it does further our understanding of the potential biomedical basis for canine aggression.

Management of diet-related behavior problems

For animals that respond to a homemade low-protein preservative-free diet, there are many options available. Regular use of a homemade diet should be discouraged unless a completely balanced ration can be formulated. Low-protein diets are commercially available (such as those prescribed for kidney disease). If owners are selecting their own foods from a pet supply outlet, they must look for diets with high-quality protein in moderate amounts and an easily digested carbohydrate source. Start with canned diets, which tend to have few, if any, preservatives. Dry foods have the most preservatives. If the condition worsens when the pet is put on a commercial ration, there are likely to be more problems than just protein content to consider.

If it is suspected that the dog might be reacting to preservatives, canned foods are an option and there are also preservative-free diets commercially available. However, as discussed above, current regulations make it almost impossible to be assured that there are actually no preservatives in preservative-free diets. Manufacturers only need to list on the label those preservatives that they add themselves during ration preparation. Therefore there is no guarantee that the manufacturer did not purchase the raw ingredients already preserved. If the pet improves when placed on a homemade diet, then the role of additives might also be considered. If the decision is made to maintain the pet on a homemade diet, it is worth having a diet recipe prepared by a veterinary nutritionist; computer software is available so that customized diets can be formulated by practitioners, and web-based options are also available (see American College of Veterinary Nutrition (acvn.org) for more information).

Prevention of diet-related behavior problems

Since most diet-induced behavior problems are idiosyncratic, it is not possible to predict and prevent most cases. There are general guidelines, however, that might be helpful. Clients do not need to feed their dogs high-protein diets. The average house pet consumes a diet that contains much more protein than is needed for amino acid requirements. The result is a loss of expensive protein in the feces and urine, or a conversion of the excess energy into fat.

Although it is unlikely that a pet's behavior is affected by preservatives (e.g., ethoxyquin, butylated hydroxyanisole, butylated hydroxytoluene), canned diets contain the least amount of preservatives. Home-delivered, preservative-free, and home-prepared pet foods are all options with which veterinarians should become familiar.

Epigenetics is the study of heritable changes in phenotype or gene expression due to mechanisms other than DNA

mutations. Diet is one of the more impactful nongenome catalysts in this regard, and the interaction of nutrients with genetic and epigenetic traits is sometimes referred to as nutritional genomics, or nutrigenomics. In this way, nutrients may affect the expression of a certain genetic trait, make a pet more or less susceptible to disease processes, and have a variety of other positive or negative effects. This will become progressively more important in veterinary medicine as researchers find links between genetic profiles and disease, the impact of diet on epigenetic inheritance, and the effects of diet on gene transcription and translation rates.¹⁷

There may also be wholly genetic factors associated with diet and there is some anecdotal evidence that behavior problems due to some dietary ingredients may be familial. It has been suggested that some breeds seem to react to preservatives (e.g., Cavalier King Charles spaniel), some to exorphines (golden retrievers) and others to serotonin-influencing factors of different meat proteins.¹⁸ Research remains to be done to confirm these possibilities. Neutering animals with these dietary idiosyncrasies will lessen the contribution of any hereditary factors to the breed gene pool.

CASE EXAMPLE

James, a neutered male 24-year-old 12-kg English Springer spaniel, had become increasingly irritable in the past year. When familiar relatives and friends visited the home he would enthusiastically greet them at the door but would now growl and snap if they reached to pet him. When resting, James would growl if anyone other than the owners approached. James appeared to enjoy resting on the couch with his owners, but if they reached to pet him, he would occasionally growl or get up and move away. He would also growl if the owners tried to remove his chew toys, but would relinquish them if they persisted.

For the past 6 months James had also begun to chew both the carpal region of his forelegs and occasionally his feet. In addition, he had developed otitis externa about 1.5 years earlier which had become chronic. At the time of his third ear flare-up about 9 months earlier, James was placed on a daily prednisone/antihistamine combination which had been weaned down to every other day for the past 6 months which prevented further ear flare-ups, although some of the skin chewing persisted.

The owners felt that his diet was causing his behavior problems. They had tried a commercial fish-based diet (for sensitive skin), an organic beef-based preservative-free commercial food and a bones and raw food (BARF) diet, with no success. Since no primary lesions were found on the dermatologic workup, just some salivary staining

from where he had been licking, James was placed on a novel protein kangaroo and oat diet for 8 weeks to investigate the role of diet further. Because the owners also needed treats for training (e.g., to give up toys and greet visitors), a hydrolyzed protein treat was also dispensed. At the 8 week re-examination the ears were well controlled and the foreleg itching had ceased. James showed no further irritable aggression when approached or handled by the owners during resting and was more willing to engage with strangers, although preventive measures were still in place. The diet was continued for 4 more weeks and corticosteroids were withdrawn, at which point the owners indicated that toy guarding and handling by owners were no longer an issue and that he no longer had issues with petting by strangers, although they continued to leave him alone when resting. Because the owners were unwilling to challenge the dog with his previous diets, an additional food source was added every 2 weeks until it was determined that dairy products and beef caused the skin and ear problems to recur.

Although the improvement in behavior was likely due to resolution of an underlying adverse food reaction and the removal of corticosteroids (both of which may have contributed to his irritability),¹⁹ the owners believed that the behavioral changes were directly related to the beef and milk which they believed were "adulterated" with hormones and antibiotics.

Ingestive behavior problems

Ingestive behavior problems may be related to management issues (e.g., obesity); undesirable but normal behaviors (e.g., food stealing/garbage raiding); medically induced ingestive disorders (polyphagia due to corticosteroid administration or hyperadrenocorticism; environmental licking due to gastrointestinal upset); and abnormal behaviors such as pica. In cats, ingestive problems were the third most common reason for referral at one behavior practice, comprising 4.3% of 736 referral cases (of which 40% were Siamese cats with pica).²⁰ In dogs, abnormal ingestive behaviors (pica, coprophagia, hyperphagia, anorexia, excessive chewing and licking) represented 1.4% of 1644 referral cases.²¹

Obesity

Obesity is the most common nutritional disorder in North America.²² A sad statistic is that over 25% of dogs in North America are overweight.²³ A recent UK study estimated that

48% of cats were overweight or obese.²⁴ It is likely that obese pets suffer more from osteoarthritis, respiratory distress, diabetes mellitus, hypertension, decreased heat tolerance, and some forms of cancer and are at increased risk if undergoing anesthesia or surgery.²⁵ Today, more than ever, pets are being "killed with kindness" as their owners allow them to become obese.

Obesity becomes more common as pets get older. Females are more prone to obesity than males, and neutered pets are more likely to become obese than intact pets.²⁶ Genetic factors are also contributory.²⁷ Labrador retrievers, Cocker spaniels, collies, dachshunds, beagles, Basset hounds, miniature schnauzers, Shetland sheepdogs, and some terriers are more prone to obesity than other breeds. Some breeds, most notably the German shepherd dog, boxer, whippet and, greyhound, actually have a lower incidence of obesity. Although genetics plays a role, clearly the most important factors leading to obesity are providing pets with excessive calories and inadequate physical activity.²⁸ In cats, the most common predictors of being overweight were being male, neutered, middle-aged,

mixed-breed, and apartment-dwelling.²⁹ Obesity is rarely seen in wild animals and only infrequently in working dogs. It is the household pet, rarely exercised, confined to the home, and fed a high-quality diet, that is most prone to obesity.

Initially, body fat was thought of as a rather inert substance, but it is now known to be an important endocrine organ and initiator of inflammation. White adipose tissue, the accumulation of adipocytes referred to as “fat,” secretes a variety of adipokines (such as leptin, adiponectin, resistin, interleukin-6) that have metabolic and endocrine functions. As adipocytes enlarge by storing increasing amounts of free fatty acids, there are a variety of systemic effects, including the release of proinflammatory cytokines. Because of these wide-ranging effects, obesity is sometimes referred to as a “disease” rather than a “condition” – one that warrants aggressive treatment.

The pet food industry markets highly palatable, high-calorie diets with a focus on the consumer.³⁰ The supplement market contributes biscuit treats and fatty acid supplements that are usually calorie-dense. The owner, with a strong emotional bond to the pet, wants to provide a healthy, tasty meal that the pet readily devours. The veterinarian, in the position of health-concerned middleperson, must counsel the owner about what is really in the best interests of the pet.

Diagnosis and prognosis

Pets are considered overweight when they are 5–10% above their ideal weight, and obese when they are 20% more than their ideal weight, although there is quite a bit of variability in how the terms are defined. This can be assessed by visual inspection (fat covering of ribs) and palpation. Body condition scoring (BCS) uses a scale to evaluate body fat subjectively and semiquantitatively by visual assessment and palpation. There are four numeric scoring systems for BCS – a 3-point scale, a 5-point scale, a 7-point scale, and a 9-point scale – and all are useful for this purpose, as long as assessments are consistent. In general, with the 9-point scale, each 1-point change from ideal represents an increase or decrease of 5%; with the 5-point scale, each point represents a 10% change. BCS should be evaluated and appropriate dietary recommendations discussed at each visit. To avoid confusion between the four scales, it is best to express the pet’s score as a numerator and the scale as a denominator (e.g., 3/3, 4/5, or E/G or 6/7, or 7/9) (Table 10.1).

Table 10.1 Body condition scoring scales

Scale	Underweight	Ideal	Overweight
3-point scale	1 or A	2 or B	3 or C
5-point scale	1, 2	3	4, 5
7-point scale	A–C or 1–3	D or 4	E–G or 5–7
9-point scale	1–3	4, 5	6–9

An example of a 5-point scale at: http://www.vetcetera.com/about_bcs.asp.

The most critical aspect of weight management is to determine the reason for the obesity. In most cases, the owners would rather believe the pet has a medical problem (hypothyroidism is a favorite) rather than consider that they are the most important cause. All obese pets should have a thorough physical examination and laboratory profile, including complete blood count, serum alanine transferase, glucose, amylase/lipase, creatinine, alkaline phosphatase, cholesterol and triglycerides, urinalysis and thyroid profile (fT₄_{ED}, cTSH), as well as blood pressure determination and perhaps imaging; however, most cases are due to feeding practices.

Owners often find it difficult to believe they are overfeeding their pets. Feeding methods may further complicate matters. For example, if food is left available all day, many pets will not limit themselves to the appropriate number of calories. Providing treats and leftovers is also an important interaction for many owners, but adds additional calories to the pet’s daily total. Coat-care supplements of fatty acids are also calorie-dense. Therefore, veterinarians counseling owners of obese pets must be prepared to determine the animal’s caloric needs, all calorie contributors in the pet’s diet, and the amount of calorie-burning activities in the pet’s lifestyle. Most owners can manage the problem more effectively when they can see, in black and white, where the problem lies. In these cases, the prognosis is good. A poor prognosis is given when owners refuse to admit there is a problem or blame the situation on others.

Management

Obesity can be dealt with intelligently and effectively if the owners are committed to helping their pets lose weight and realize that their pets will be healthier if they make the effort. All weight reduction programs should be performed under the supervision of a veterinarian to achieve the desired goal safely and effectively. Decreasing intake in calories through diet, restricting treats, and increasing calorie utilization through increased activity and exercise are the basics of any weight loss program. A healthy weight loss goal is a loss of 1–2% of body weight a week.³¹

There are a variety of weight reduction diets, each marketed to reduce the intake of calories while maintaining optimum nutrition. Unfortunately, there can be wide variation in recommended calorie intake, kilocalories, and costs for diets marketed for weight loss in pets.³² In dogs, there is some evidence that pets might be more satiated with increased fiber in the diet, but the owners will need to deal with the increased stool volume.³³ High-protein diets may facilitate the maintenance of lean body mass during weight loss and improve weight loss success rates.³⁴ High-protein, low-carbohydrate diets have also been advocated to enhance weight loss in dogs.³⁵ Extra caution must be taken to restrict calories more gradually and to monitor food intake when beginning a weight reduction program in cats to prevent hepatic lipidosis.³⁶ Additional research is needed to see if fiber content, diacylglycerol, or low-glycemic-index starches can aid in weight loss by modifying lipid metabolism.³⁷ Occasionally nutritional supplements are recommended as weight loss aids, but the evidence is often inconclusive as to ultimate benefits. L-carnitine has the most support, with some possible benefit from supplementation with omega-3 fatty

acid supplements, dehydroepiandrosterone, phytoestrogens, chromium, and others³⁸ also being used for this purpose.

It should be noted that diet and exercise recommendations alone are insufficient in the majority of cases to achieve successful weight loss. Medical therapy, such as with dirlotapide (dogs only), can also be useful, primarily acting by appetite suppression, but also somewhat by reducing fat absorption.³⁹ Dirlotapide partially inhibits microsomal triglyceride transfer protein inhibitor and the presence of lipids in the enterocyte triggers release of hormones, such as peptide YY, which acts as a satiety signal in the hypothalamus.⁴⁰

Physical exercise and other forms of activity will increase calorie expenditure while providing additional enrichment opportunities. However, no evidence exists to suggest how much exercise to prescribe (qualitative and quantitative) to effect weight loss in dogs and cats.⁴¹ One study of dogs with a BCS of 5/5 demonstrated that a 3-month program of increased exercise using leash walks and an underwater treadmill led to a mean weight loss of 20%.⁴² While longer walks and more play activities might be good general suggestions for dogs, owners should be encouraged to focus on activities that are most appropriate for the age, health, breed, and individual needs of the dog and most practical for the family and household.

Behavioral and physical benefits can be achieved through an increase in social activities, including:

- reward-based training sessions
- interactive games such as tug or fetch
- agility, competitive flyball, or Frisbee
- play sessions with other dogs
- activities such as herding trials, pulling carts, retrieving, swimming, or even a treadmill.

For older pets or those with physical limitations, short walks for a sniff around the environment can help. Cats can also benefit from reward-based training, walking outdoors on a leash, or time outdoors in a cat enclosure. For dogs and cats, having the pet “work for its food” can make feeding a more physically and mentally challenging process, while providing a form of portion control. With the wide variety of food manipulation (puzzle) toys and chew toys now available, appealing and durable toys are available for virtually any cat or dog (see [Chapter 4](#)). For some pets, the feeding toy should either replace food bowl feeding or follow a very small meal.⁴³ Games of search and seek for food can help to increase physical activity by encouraging stair climbing, jumping, and perching for cats, or exploration and scavenging for dogs. Toys that stimulate chase such as dangled wand toys with feathers or cardboard prey, or small toys that the cat can roll and bat provide an outlet for predatory activity while expending calories. The exploratory nature of cats can be further encouraged by providing novelty in the form of paper bags, cardboard boxes, and locations for climbing, scratching, and perching areas.⁴⁴

Regardless of whether the approach is diet, increased activity, or medical therapy, managing feeding behavior is the key to success. Having the owners count calories makes them more likely to comply. By determining exactly how much the pet should eat each day, the owner can then choose how best to divide the calories between feeding toys, multiple small meals in the feeding dish, or food treats for training. The family should soon learn how to control the provision of

food better to be able to last through the entire day. In addition, clients should be cautioned that when they give in to begging, they only reinforce that behavior. Demands for food should be met with inattention. If owners provide food in a regular and predictable way (e.g., from food bowls or feeding toys or as rewards for training and cease giving food for attention-seeking behaviors), food solicitation should cease. Stimulus control modification can also be used to regulate the cues that trigger feeding; in other words, stimuli that may become paired with feeding need to be carefully managed. Stimuli where the pet might expect food or a treat include the owner's arrival home, entering the kitchen, opening cupboards, drawers, or the refrigerator, or eating a meal. Occupying the pet in other activities at these times (e.g., play, taking for walk, placing outdoors) can change the meaning of these cues. Alternately a small measured amount of calories can be provided in a food manipulation puzzle at each of these times as part of the overall feeding program. By sticking to predictable feeding routines, times, and places, the pet should soon learn when and where to expect food.

The efficacy of any program should be measured by regularly scheduled follow-up visits to reassess BCS, weigh the pet, and make adjustments where sufficient improvement is not being achieved. Scheduled weigh-ins, in fact, may be the most important part of the weight reduction program. Once the weight has been safely lost, it is important not to resort to the old behaviors that resulted in obesity to begin with. Rebound weight gain is common if pets are allowed access to more calories following weight loss. Therefore the continued use of reduced-calorie foods with a target of 90% of requirements is usually recommended because an increase in snacks and a decrease in activity are bound to creep back at some point.⁴⁵

It is also possible that some pets that appear obsessive about eating, eat voraciously, and perhaps display concurrent food-related aggression may have a pathologic “compulsive” eating disorder. These cases would be treated as with other compulsive disorders ([Chapter 11](#)) by identifying and reducing stressors, environmental and behavior management, and potentially with drugs such as fluoxetine or clomipramine. Dirlotapide is also a consideration for its appetite-suppressing effects, and should only be used in dogs. Until more is known about this potential cause of overeating, it is best not to combine drugs in a treatment regimen, but to attempt to understand better the causes of the condition and its response to single therapeutic agents.

Prevention

It is important for the family to understand that feeding recommendations by food manufacturers are merely a guideline, and assessing the pet's body condition is the only sure way of determining how much to feed. Calorie restriction rather than caloric excess should be the operative concept. Behaviorally this can best be achieved by developing feeding strategies that focus on counting calories, understanding BCS, having pets work for some or all of their food (reward training, puzzle toys), and by avoiding free-choice feeding or feeding on demand. Unfortunately, once excess weight is gained, calorie restriction and changing feeding practices can be challenging to implement successfully.

CASE EXAMPLE

At his annual physical examination, Sheldon, a 19-kg, 6-year-old neutered male terrier mix, had an unremarkable physical examination except for obesity (BCS 8/9). The owners were not sure why Sheldon was overweight because he only ate one cup of food twice daily, as recommended by the pet food manufacturer. They thought that perhaps he might have problems with his metabolism because he also was not very “spunky,” and that it had something to do with the fact that he was neutered before 1 year of age.

The owners were not convinced that Sheldon was being overfed, but agreed to explore the situation further. A worksheet was used to determine everything that Sheldon ate on a typical day as well as his usual exercise schedule. Both of the owners worked and Sheldon was left alone most of the day. They left food available for him at all times but some of it was still in his bowl when they got home at night. He got three biscuit snacks in the morning when they left for work, three when they returned, and three before bedtime. When eating or snacking the owners also gave Sheldon “a small portion.”

Routine hematological and biochemical tests, including a thyroid profile of free and total levels of thyroxine, as well as thyroid-stimulating hormone, were within normal limits. It was determined that Sheldon should be receiving no more than 850 kcal daily based on an ideal weight of 14 kg. However, his nine biscuits alone amounted to 810 kilocalories, not to mention the few “extras” he received when the owners were eating or snacking.

The owners were instructed to divide each treat into three pieces of roughly 30 kcal each and to provide Sheldon with no more than four of these (or 120 kcal/day). Instead the owners were able to find 10-kcal treats and were therefore able to give 12 of these treats each day. The treats were only to be given for training Sheldon to lie on a dog bed in the corner of the kitchen. To achieve weight loss it was decided to create a caloric deficit of 250 kcal/day to achieve a weight loss of about 250 g/week. Therefore, Sheldon would be getting 600 kcal/day, including 120 kcal from his treats. The owners were provided with a prescription weight control diet and were instructed to measure the 480 kcal (2 cups) and split the food into two scheduled meals and the balance in food puzzle toys. If the measured food was gone Sheldon could get no more food except for a small piece of celery or cucumber. In addition, they decided to add one 10-minute fetch session each morning and a 2-km walk each evening. They also planned to begin treadmill training their dog as they had seen on www.youtube.com. If Sheldon had not lost at least 1.5 kg in 3 months, a counterproposal was made and accepted that dirlotapide would be added to the treatment regimen.

On re-examination 12 weeks later, Sheldon was a svelte 16 kg and much more energetic. The owners did have difficulty sticking to the treat regime but had substituted small pieces of carrots, celery, cucumber, and popcorn for one-quarter cup of the food. Some of the food was being placed in a feeding toy instead of a food bowl, which increased feeding time by about 20 minutes. They had not succeeded with the treadmill but kept up with the walks, and were fairly consistent with the fetch games. As long as the owners were able to maintain regular exercise, we decided that Sheldon could now be maintained on a weight control diet at about 90% of his daily requirements (about 765 kcal/day), which included the present treat regime and 2.5 cups of food divided over the day.

Pica

Pica is an abnormal craving or appetite for ingesting nonfood substances. Of course many animals, especially young animals, may chew on a variety of objects that might also be ingested as a part of exploratory behavior. These might include cable and telephone cords, carpeting, leather objects, owner clothing, and plants. In addition, left-over food items

are frequently stolen from the garbage by pets of all ages and some, such as fruit pits, bones, and whatever the food has been wrapped in (e.g., Styrofoam, plastic, aluminum foil), can lead to mechanical damage or obstruction. The cause of pica in pets is unknown, although exploratory behavior of puppies and kittens, inadvertent owner reinforcement, medical problems, stress, and persistence of infantile oral behavior could all play a role. In addition, genetic factors have been identified that contribute to pica associated with object sucking (blanket sucking and other picas in Doberman pinschers and wool sucking in Oriental breeds of cats).^{46,47} Although woolen items are most commonly chosen (93% of cases), affected cats also might chew on cotton, synthetics, rubber, plastic, paper, and cardboard. In cats rubber bands, baby bottle nipples, string, and thread appear to be some of the more common picas while in dogs rock and stone eating is a problem that appears to be of particular concern. Insufficient feeding, especially in puppies, may lead to pica.

Diagnosis and prognosis

Pica is diagnosed by observing the abnormal behavior. There are no specific laboratory tests that might provide additional insight, but a full medical workup is essential, since medical conditions that lead to nutritional deficiencies or electrolyte imbalances, gastrointestinal disturbances, conditions that lead to polyphagia, and central nervous system disturbances should all be ruled out. The prognosis is variable, but most cases can be prevented or improved.

Management

The problem can generally be managed by keeping the ingested objects away from the pet (or vice versa) and ensuring that the pet's behavioral needs are adequately addressed (see [Chapter 4](#)). In addition, providing alternate feeding activities (e.g., food puzzle toys, durable and appealing chew toys) and other forms of oral stimulation such as dental chews or cat grass, or diets that might better meet the pet's nutritional and behavioral needs (e.g., increased bulk, nutritional balance) might reduce picas. Medication may be helpful for compulsive disorders. For treatment and case examples of compulsive disorders, see [Chapter 11](#).

Coprophagia

Coprophagia is an ingestive behavior involving the consumption of feces. It is not uncommon in dogs but is rare in cats. Dogs may selectively ingest their own feces, feces of other dogs, feline feces, ungulate feces, other mammalian feces, or any type of feces that is available. Whereas adult bitches will consume the feces of their puppies, all other forms of coprophagia should first be investigated to determine if the problem is medical. See [Chapter 6](#). Puppies may indulge in coprophagia as harmless investigative or play behavior, and owners must be cautious not to reinforce the behavior inadvertently. Pets that are underfed or placed on an overly restricted diet may have a voracious appetite, which may result in ingestion of stool. Pets with medical problems leading to malabsorption may eat their own stools which contain undigested nutrients. In one study, 4 weeks after adoption from an animal shelter, about 10% of dogs were reported to eat feces.⁴⁸ In one internet survey 16% of dogs

were frequent stool eaters, with intact males more likely than neutered males or females. Dogs were 2/3 more likely to eat other dogs' stools than their own, indicating possibly a different motivation. Greedy eating is a risk factor. Most dogs are from a multi-dog household and eat fresh stools. The problem may be derived from an innate desire to maintain a clean home environment and control parasites.⁴⁹

Diagnosis

The ultimate cause of coprophagia in adult dogs has always been elusive. Although the problem is most often behavioral, organic reasons must be ruled out. One of the most important aspects of diagnosis is the medical history:

- What stools are being ingested (own stools, family dogs, unfamiliar dogs, other animals)?
- Signalment: sex, neuter status, stage of estrous cycle
- Diet: eating habits, changes in diet prior to onset
- Medical health, especially as it pertains to appetite, weight, metabolic rate, and digestion
- Concurrent medication, including those that might have an effect on appetite
- Stool consistency, volume, appearance, frequency, and any evidence of tenesmus.

Soft stools, incomplete digestion of food within the stools, evidence of steatorrhea, or increased stool frequency or volume, especially if associated with a low BCS, might indicate a problem with digestion or absorption such as exocrine pancreatic insufficiency. Other gastrointestinal disturbances, such as inflammatory bowel disease, endocrinopathies, central nervous system diseases, or any disease or drug that causes polyphagia (e.g., Cushing's disease, glucocorticoid administration), might lead to pica or coprophagia. Calorie-restricted diets, especially those that are not balanced or do not adequately satiate the dog, may also lead to coprophagia. In addition, pets that are prone to hyperphagia and overeating may be at risk.

Laboratory testing might include a complete blood count, biochemical profile, urinalysis, trypsin-like immunoreactivity, vitamin B₁₂, folate, fecal fat, fecal trypsin, fecal muscle fiber, and fecal evaluation for *Giardia* and other internal parasites.

If no medical cause can be identified, then the behavioral history should be closely assessed, including:

- Description of the problem, including when began, when, and where it takes place
- Type of stool the dog eats
- Owner's response and attempts at correction
- Any changes in household, diet, health prior to onset of problem
- Eating habits, including polyphagia or hyperphagia
- Other signs of compulsive behaviors, oral behavioral disorders, or pica
- Housetraining status, including where and when the pet eliminates
- Housing including daily schedule for play, exercise, attention, training, and elimination.

Management

If the cause of the coprophagia cannot be determined, environmental modifications are the best chance for therapeutic

success. Denying access to feces is the first step. The dog should be closely observed outdoors. After each elimination, the dog should be taught to come and sit before the owner cleans up the stool. After all dogs in the family have eliminated and the stools have been removed, the dog might then be allowed to roam in the yard. For dogs that eat other dogs' stools, keeping the dog on leash or leash and head halter should allow the owner to prevent or interrupt ingestion of stool. In order to allow the dog to run in an off-leash area, a basket muzzle could be used as a preventive.

Treatment

Medical problems must first be diagnosed and treated. If the dog is eating its own stool, the focus should be on evaluation of the pet for any health issue that might lead to poor digestion or increased appetite. Changing the diet to one with greater digestibility or one with more bulk or fiber to satiate the dog better may help. Dietary supplements containing proteolytic enzymes might increase protein absorption and decrease the appeal of the stool. For dogs that prefer to eat stools of a more solid consistency, fiber or vegetable oil may alter the texture to reduce its appeal. Extending dinner time by placing food in puzzle toys or through seek-and-search games might help. A number of commercial or homemade products containing monosodium glutamate, capsaicin, yogurt, pineapple, or spinach have been suggested to make the food more digestible and the stools less appealing. However, while there may be anecdotal reports of efficacy, a recent survey reported cure rates of 1–2%.⁴⁹

While punishment techniques such as noise aversion or lacing the stool with an aversive taste have also been recommended, the only method that has had any limited degree of success is the use of a remote spray collar.⁵⁰ While a nauseant such as lithium chloride would in theory be most likely to cause a lasting aversion, successfully obtaining and effectively utilizing the product is not likely practical.

CASE EXAMPLE

Mr. T, a 4-year-old neutered male Labrador retriever, had first been seen eating his stool at 3 months of age whenever he had soiled his kennel. After changing his diet to a high-quality puppy food and adding a commercial monosodium glutamate supplement (Forbid) to his diet, the owners had no further problems. Snooky, a 2-year-old female spayed Golden retriever, had been obtained at 2 months of age. At that time, the owners fenced their backyard to be able to allow Snooky and Mr. T to spend time outdoors together. Snooky and Mr. T were taken for at least two walks a day primarily by the teenage son, and were always supervised when outdoors in the yard. Approximately 1 year later, the son went off to college and the parents continued the afternoon walks but would put the dogs in the backyard to eliminate each morning before leaving for work and each evening before bedtime. The next weekend, when the owners went out to clean the yard, no stools were anywhere to be seen. By monitoring the dogs when they were in the yard, the owners quickly confirmed their suspicions – that Mr. T was eating both his and Snooky's stools.

Health problems in both dogs were ruled out through physical exam, fecal analysis, and blood and urine testing. The owners then tried a change to a dental diet with higher fiber, a trial with a

CASE EXAMPLE—cont'd

monosodium glutamate supplement, and a variety of internet-suggested additives, including adding pineapple, a probiotic, and even a breath mint with Retsyn. Lacing the stool with cayenne pepper and intermittent verbal punishment had also been ineffective. The owners soon came to realize that a preventive approach would need to be reinstituted. An additional walk was added each morning and the dogs were supervised when in the yard until both had eliminated and the stools were removed. The owners also purchased a basket muzzle to place on Mr. T. when they placed the dogs outdoors in the yard to eliminate and were unable to supervise effectively.

Hyporexia: the “fussy” or “picky” eater

Both dogs and cats can be finicky eaters. In most cases, the problem stems from previous feeding experience, although underlying medical problems can contribute. Any medical problem, even if short-term, that leads to nausea can incite a food aversion. A pet may also be reluctant to eat a commercial diet because it has learned that if it waits long enough it will receive more palatable food from the owner.

The causes of most feeding idiosyncrasies are unknown. What is known is that odor, taste, texture, and temperature can be adjusted to tempt the problem feeder to eat, and that novel foods may increase appetite.

Diagnosis and prognosis

If the owner complains of a finicky eater, or one that occasionally skips meals, first determine if the pet's weight is in the normal range. In many cases, these pets are of normal weight (or even overweight) and are already consuming all the calories needed on a daily basis. Some dogs may even skip an occasional day with no ill effects. This may be a normal mechanism for maintaining optimal weight. If the pet has an acceptable body weight, it is important to rule out the possibility that the pet is obtaining food elsewhere, either from a neighbor or by hunting. Also make sure to inquire about biscuits, treats, or table scraps the pet might obtain from family members or visitors.

For pets that are hyporexic and underweight, a complete history and thorough medical evaluation need to be completed to rule out underlying disease processes. Pancreatic, dental, gastrointestinal, kidney, and liver disease can all account for dietary discrimination. If the pet is on any medication, determine if it might have any effect on reducing appetite and discontinue as a test if not contraindicated. Also be certain to evaluate the pet for signs of chronic or recurrent anxiety. Anorexia of acute onset, especially in cats, can be due to stressors such as the addition of a new cat or other significant changes in the home, family, or schedule and can have serious sequelae such as hepatic lipidosis if not attended to immediately.

Management and treatment

Pets with underlying medical problems need to have them addressed. One of the most insidious causes of dietary discrimination is dental disease. It has been estimated that over 85% of dogs and cats have periodontal disease by 4

years of age. Therefore, some dogs and cats may have dental pain that could interfere with feeding. With gastrointestinal disturbances, concurrent signs such as abnormal stool frequency or consistency, abdominal pain, flatulence, or environmental licking might be expected; alternately some degree of improvement might be seen with a change in food to a bland diet or novel protein diet, or gastric medications such as H₂ antagonists, proton pump inhibitors, sucralfate, or an antinauseant.

For healthy animals that continue to turn up their noses at mealtime, there are some alternatives. Owners often have a preconceived notion of how much their pet should be eating, and it may be completely unrealistic. Therefore begin by calculating the dog's normal daily caloric requirement and its optimum body weight. The first step might then be to have the owners limit the use of treats and table scraps and monitor for an increase in food consumption. Compliance can be determined by regular reassessment of body weight. Sometimes, switching to a food that is less calorie-dense will solve the problem because the pet consumes more to achieve its daily caloric needs. Rewards (such as special treats) can be given each time the pet voluntarily eats its designated food (Box 10.1).

Box 10.1 Things the family can do for the “picky” eater (client handout #32, printable version available online)

1. Moisten dry food with warm water or add some canned food
2. Most dogs prefer the flavors of beef, chicken, pork, or lamb rather than vegetable protein such as soy, corn, and wheat, while some may show a strong preference for fish. Choose a food that provides these more desirable ingredients. Cats prefer beef, chicken, fish, and pork; select these ingredients for finicky cats
3. Warming the food can enhance the flavor
4. Add flavor enhancers to the diet, such as liver or poultry broths, bouillon cubes, or commercial gravy products and food enhancers for pets
5. Add very small amounts of cooked garlic to the food (large amounts can be toxic to both dogs and cats)
6. Add fresh fruit purées as a dressing on the food. Mashed apple or banana is a good choice to try first or add small amounts of artificial sweeteners such as aspartame. Avoid raisins, grapes, and xylitol which can be toxic
7. Mix in a small amount of a freshly cooked protein (e.g., hamburger, liver, chicken, fish). Slowly wean them off the fresh-cooked food to the lowest amount that is necessary to maintain appetite
8. Try foods of different flavors and texture (e.g., pumpkin). While novelty appeals to many pets, some will avoid anything new
9. Limit treats. The picky pet may be filling up on treats instead of eating its meals
10. If the pet is finicky because a new diet is being introduced, add small amounts of the new diet to the previous diet, then gradually increase the proportion of the new diet
11. Identify whether stress is a factor in reducing anxiety and treat with appropriate environmental management, behavioral management, and drugs where necessary
12. For hospitalized cats, provide the cat with its own carrier. Synthetic facial pheromone may increase food intake
13. Be certain to rule out any possible medical causes. In some cases appetite stimulant medications might be a consideration.

Adapted from Ackerman L. What every dog owner, breeder and trainer should know about nutrition. Alpine Publications, Loveland, Colorado, 1996.

Prevention

Normal, healthy pets rarely try to starve themselves. Most finicky pets actually receive adequate nutrition on a daily basis. Veterinarians should make dietary recommendations from the outset to avoid the development of unbalanced and unhealthy dietary preferences. Also discuss the types of treats that would be most healthy and how and when they might be given. Be certain that the family counts any treats or human foods into the daily caloric calculations and limits them to a small proportion of the diet to ensure that they do not have an impact on nutritional balance. Some variety in protein source, flavor, and texture (canned versus dry)

might be considered when feeding young pets, especially cats, to avoid the development of a narrow range of food preferences.

Appetite stimulants

Drugs such as the antiserotinergetic antihistamine, cyproheptadine, and benzodiazepines such as diazepam, oxazepam, or flurazepam may be useful as appetite stimulants on a short-term basis. Mirtazapine, a human antidepressant with serotonergic and noradrenergic effects, has been found to be an effective appetite stimulant and nausea treatment for dogs and cats (see [Chapter 8](#)).

References

1. Fitzgerald DM, Turner DC. Hunting behaviours of domestic cats and their impact on prey populations. In: Turner D, Bateson P, editors. *The domestic cat; the biology of its behaviour*. 2nd ed. Cambridge: Cambridge University Press; 2000. p. 152–2.
2. Members of the Panel on Feline Behavior Guidelines. Feline behavior guidelines from the American Association of Feline Practitioners. *J Am Vet Med Assoc* 2005;227:70–80.
3. Rosado B, Garcia-Belenguer S, Leon M, et al. Blood concentrations of serotonin, cortisol, and dehydroepiandrosterone in aggressive dogs. *Appl Anim Behav Sci* 2010;123:124–30.
4. Annunziata C, Shell L, Thatcher C, et al. Effects of a low protein diet on levels of serotonin in canine cerebrospinal fluid. Behavioral abstract. *Am Vet Soc Anim Behav Newslett* 1996;18:3.
5. DeNapoli JS, Dodman NH, Shuster L, et al. Effect of dietary protein content and tryptophan supplementation on dominance aggression, territorial aggression, and hyperactivity in dogs. *J Am Vet Med Assoc* 2000;217:504–8.
6. Dodman NH, Reisner I, Shuster L, et al. Effect of dietary protein content on behaviour in dogs. *J Am Vet Med Assoc* 1996;208:376–9.
7. Da Graca Pereira G, Fragosos S. L-tryptophan supplementation and its effect on multi-housed cats and working dogs. *Proceedings of the 2010 European Veterinary Behaviour Meeting*. Hamburg, 2010, 30–35.
8. Kato M, Miyaji K, Ohtani N, et al. Effects of prescription diet on dealing with stressful situations and performance of anxiety-related behaviors in privately owned anxious dogs. 2012;7:21–6.
9. Innis SM. Dietary (n-3) fatty acids and brain development. *J Nutr* 2007;137: 855–9.
10. Ackerman L. *Atlas of small animal dermatology*. Inter-Medica Publishing, Buenos Aires, 2008.
11. Filburn CR, Griffin D. Effects of supplementation with a docosahexaenoic acid-enriched salmon oil on total plasma and plasma phospholipid fatty acid composition in the cat. *Intern J Appl Res Vet Med* 2005;3:116–23.
12. Heinemann KM, Bauer JE. Docosahexaenoic acid and neurologic development in animals. *J Am Vet Med Assoc* 2006;228:700–6.
13. Zicker SC, Jewell DE, Yamka RM, et al. Evaluation of cognitive learning, memory, psychomotor, immunologic, and retinal functions in healthy puppies fed foods fortified with docosahexaenoic acid-rich fish oil from 8 to 52 weeks. *J Am Vet Med Assoc* 2012;241:583–94.
14. Bauer JE, Heinemann KM, Lees GE, et al. Retinal functions of young dogs are improved and maternal plasma phospholipids are altered with diets containing long-chain n-3 polyunsaturated fatty acids during gestation, lactation, and after weaning. *J Nutr* 2006;119:91S–994S.
15. Ackerman L. Adverse reactions to foods. *J Vet Allergy Clin Immunol* 1993;1:18–22.
16. Raditic DM, Remillard RL, Tater KC. ELISA testing for common food antigens in four dry dog foods used in dietary elimination trials. *J Anim Physiol Anim Nutr* 2011;95:90–7.
17. Swanson KS. Nutrient–gene interactions and their role in complex diseases in dogs. *J Am Vet Med Assoc* 2006;228:1513–20.
18. Ballarini G. Animal psychodietetics. *J Small Anim Pract* 1990;31:523–32.
19. Notari L, Mills D. The effects of exogenous corticosteroids on dog behavior: a preliminary study. Abstract from 2009 IVBM, Edinburgh. *J Vet Behav* 2010;5:63.
20. Bamberger M, Hout KA. Signalment factors, comorbidity, and trends in behaviour diagnosis in cats; 736 cases (1991–2001). *J Am Vet Med Assoc* 2006;229:1602–6.
21. Bamberger M, Hout KA. Signalment factors, comorbidity, and trends in behaviour diagnosis in dogs; 1644 cases (1991–2001). *J Am Vet Med Assoc* 2006;229:1591–601.
22. Kallfelz FA, Dzanis DA. Overnutrition: an epidemic problem in pet animal practice? *Vet Clin North Am* 1989;19:433–45.
23. Lund EM, Armstrong PJ, Kirk CA, et al. Prevalence and risk factors for obesity in adult dogs from private United States veterinary practices. *Intl J Appl Res Vet Med* 2006;4:177–86.
24. Courcier EA, O'Higgins R, Mellor DJ, et al. Prevalence and risk factors for feline obesity in a first opinion practice in Glasgow, Scotland. *J Feline Med Surg* 2010;12:746–53.
25. Zoran D. Obesity in dogs and cats: a metabolic and endocrine disorder. *Vet Clin North Am Small Anim Pract*. 2010;40:221–39.
26. Markwell PJ, Edney ATB. The obese patient. In: Kelly N, Wills JM, editors. *Manual of companion animal nutrition and feeding*. Cheltenham: BSAVA Publications; 1996. p. 109–16.
27. Byers CG, Wilson CC, Stephens MB, et al. Exploring the causes and consequences of canine obesity. *Vet Med* 2011;106:184–92.
28. Gentry SJ. Results of the clinical use of a standardized weight-loss program in dogs and cats. *J Am Anim Hosp Assoc* 1993;29:369–75.
29. Scarlett JM, Donoghue S, Saidla J, et al. Overweight cats – prevalence and risk factors. *Int J Obesity* 1994;18(Suppl 1):S22–8.
30. Brown RG. Dealing with canine obesity. *Can Vet J* 1989;30:973–5.
31. Byers CG, Wilson CC, Stephens MB, et al. Treating excess weight with a multimodality approach. *Vet Med* 2011;106:193–200.
32. Linder DE, Freeman LM: Evaluation of calorie density and feeding directions for commercially available diets designed for weight loss in dogs and cats. *J Am Vet Med Assoc* 2010;236:74–7.
33. Buffington CAT. Management of obesity – the clinical nutritionist's experience. *Int J Obesity* 1994;18(Suppl 1):S29–35.
34. German AJ, Holden SL, Bissot T, et al. A high protein high fibre diet improves weight loss in obese dogs. *Vet J* 2010;183:294–7.

35. Bierter TL, Bui LM. High-protein low-carbohydrate diets enhance weight loss in dogs. *J Nutr* 2004;134:2087S–9S.
36. Butterwick RF, Wills JM, Sloth C, et al. A study of obese cats on a calorie-controlled weight-reduction programme. *Vet Record* 1994;134:372–7.
37. Mitsuhashi Y, Bauer JE. Dietary management of obesity in companion animals via alteration of lipid metabolism. *J Am Vet Med Assoc* 2009;235:1292–300.
38. Roudebush P, Schoenherr WD, Delaney SJ. An evidence-based review of the use of nutraceuticals and dietary supplementation for the management of obese and overweight pets. *J Am Vet Med Assoc* 2008;232:1646–55.
39. Gossellin J, McKelvie J, Sherrington J, et al. An evaluation of dirlotapide to reduce body weight of client-owned dogs in two placebo-controlled clinical studies in Europe. *J Vet Pharmacol Ther* 2007;30(Suppl 1):73–80.
40. Wren J, Gossellin J, Sunderland SJ. Dirlotapide: a review of its properties and role in the management of obesity in dogs. *J Vet Pharmacol Ther* 2007;30(Suppl 1):11–6.
41. Courcier E, Thomson R, Mellor D, et al. An epidemiological study of environmental factors associated with canine obesity. *J Small Anim Pract* 2010;51:362–7.
42. Chauvet A, Laclair J, Elliott DA, et al. Incorporation of exercise, using an underwater treadmill, and active client education into a weight management program for obese dogs. *Can Vet J* 2011;52: 491–6.
43. Davies K. The effects of a novel feeding device on the behaviour of domestic cats. In: Proceedings of the 7th International Veterinary Behavior Meeting, Edinburgh, 2009.
44. Neilson JC, Forrester SD. Multimodal management of feline obesity. NAVC Hills Feline Symposium, 2011.
45. Roudebush, P; Schoenherr, WD; Delaney, SJ: An evidence-based review of the use of therapeutic foods, owner education, exercise, and drugs for the management of obese and overweight pets. *J Am Vet Med Assoc* 2008;233:717–25.
46. Bradshaw JWS, Neville PF, Sawyer D. Factors affecting pica in the domestic cat. *J Appl Anim Behav Sci* 1997;52:373–9.
47. Moon-Fanelli A, Dodman NH, Cottam N. Blanket and flank sucking in Doberman Pinschers. *J Am Vet Med Assoc* 2007;231:907–12.
48. Wells DJ, Hepper PG. Prevalence of behavior problems reported by owners of dogs purchased from an animal rescue shelter. *Appl Anim Behav Sci* 2000;69:55–65.
49. Hart BL, Tran AA, Bain MJ. Canine conspecific coprophagia; who, when and why dogs eat stools. *Proc ACVB/AVSAB Behavior Symposium* 2012, San Diego, 8.
50. Wells DL. Comparison of two treatments for preventing dogs eating their own faeces. *Vet Rec* 2003;153:51–3.

Recommended reading

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| <p>Davenport GM, Kelley RL, Altom EK, et al. Effect of diet on hunting performance of English pointers. <i>Vet Ther</i> 2001;2:10–23.</p> <p>Diez M, Leemans M, Houins G, et al. Specific-purpose food in companion animals. The new directives of the European Community and practical use in the treatment of obesity. <i>Ann Méd Vét</i> 1995;139:395–9.</p> | <p>Edney ATB, Smith PM. Study of obesity in dogs visiting veterinary practices in the United Kingdom. <i>Vet Record</i> 1986;118:391–6.</p> <p>Legrand Defretin V. Energy requirements of cats and dogs – what goes wrong. <i>Int J Obesity</i> 1994;18(Suppl 1):S8–S13.</p> | <p>Mugford RA. The influence of nutrition on canine behaviour. <i>J Small Anim Pract</i> 1987;28:1046–55.</p> <p>Norris MP, Beaver BV. Application of behaviour therapy techniques to the treatment of obesity in companion animals. <i>J Am Vet Med Assoc</i> 1993;202:728–30.</p> |
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Stereotypic and compulsive disorders

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Introduction

Compulsive disorders in dogs and cats have also been referred to as obsessive-compulsive disorders (OCD) and stereotypies.^{1,2} A stereotypy is an abnormal invariant, repetition of a motor pattern that serves no apparent function. These behaviors have been commonly reported in farm, zoo, and laboratory animal species, and initially arise in situations of conflict or frustration related to confinement or husbandry practices. Maternal deprivation has also been shown to contribute to the development of stereotypic behaviors.³ More recently, stereotypies have been described as invariant repetitive behaviors induced by frustration, inability to cope, or central nervous system (CNS) dysfunction.⁴ However, since the diagnosis is phenotypic and biological causes are as yet unknown, the term “abnormal repetitive behaviors” has been suggested.^{3,5} This definition also allows inclusion of other environmentally induced frustration behaviors in farm animals, such as nonnutritive suckling in early weaned calves, which may be transient and variable.³ In dogs and cats behaviors such as tail chasing, rhythmic barking, wool sucking, or self-traumatic behaviors might also fit this definition. It is thought that some stereotypic behaviors, at least in their early stages, may provide a

mechanism for the pet to cope. For example, nonnutritive suckling in calves may assist digestive processes.³ However, repetitive behaviors that persist over time become habitual and can lead to lifelong changes in CNS function and behavior, which affect both health and welfare.³

Compulsive behaviors are abnormal and repetitive, and may be variable in form and fixated on a goal.⁶ They are generally derived from normal behaviors such as grooming (psychogenic alopecia), predation (tail chasing, pouncing), ingestion (pica), or locomotion (fence pacing). Other abnormal repetitive behaviors which have been placed in the compulsive disorder spectrum in dogs appear to have a hallucinatory component such as snapping at the air, or upward gazing. Compulsive disorders first arise in situations of frustration or conflict but persist in situations outside the original context.² They most commonly arise in the prepubertal (e.g., 3–6 months) period, prior to social maturity (12–36 months), or after recognizable periods of change or distress.^{1,7} The behaviors have no apparent goal and have an element of dyscontrol in either the initiation or termination of the behavior. They may be repetitive, exaggerated, sustained, or so intense that they might be difficult to interrupt. Although compulsive behaviors may also appear to provide a mechanism for coping for some pets (i.e., achieve behavioral homeostasis), the behavior becomes compulsive when

the behavior does not help the pet to settle or cope and interferes with normal daily function.¹

The rationale for labeling these disorders in pets as compulsive is based in part on the use of the dog as a model for human OCD. Abnormal serotonin transmission has been identified as a primary mechanism by which compulsive disorders are induced and in humans the condition preferentially responds to drugs that inhibit serotonin reuptake.^{8,9} Using dogs with acral lick dermatitis (ALD) as a model for the human disorder, drugs that inhibit serotonin reuptake, such as clomipramine, fluoxetine, and citalopram, were found to improve clinical signs while drugs that had more effect on norepinephrine reuptake, such as desipramine, were not effective.^{10–13} Clinical studies and case studies on the treatment of compulsive disorders in dogs and cats have confirmed the use of a tricyclic antidepressant (TCA), clomipramine, or a selective serotonin reuptake inhibitor (SSRI), such as fluoxetine, as the most effective primary form of drug therapy for dogs and cats, with a decrease in behaviors reported of at least 50–75% within 4 weeks.^{1,14–16}

Compulsive disorders are most commonly seen in genetically predisposed individuals that are subjected to chronic or recurrent conflict or frustration or whose behavioral needs are not adequately met. In a study in Brazil of 20 dogs with ALD that could not be attributed to underlying medical causes, all dogs were described as having an anxious personality. None of the owners played with their dogs routinely, and 70% were never walked.¹⁷ A canine chromosome locus for flank and blanket sucking in Dobermans has recently been identified.¹⁸ Other inherited susceptibilities include tail chasing and spinning in German shepherd dogs, bull terriers, Anatolian sheepdogs, and Australian cattle dogs, and pica and wool sucking in Burmese and Siamese cats.^{1,19–22}

Compulsive disorders are derived from normal behaviors, such as grooming, ingestion, predation, and locomotion, although hallucinatory signs might be more difficult to categorize. Most common presentations include: (1) dermatologic (self-trauma); (2) locomotor and predatory; (3) neurologic (including hallucinatory); and (4) oral/ingestive manifestations (Table 11.1).

Behavioral pathogenesis of compulsive disorders

Stereotypic and compulsive disorders are most likely to arise in situations of conflict or frustration where the pet does not have a strategy (control) for effectively dealing with the situation. The result may be a displacement behavior where the response to the stimulus or situation is inappropriate or out of context (e.g., circling, tail chasing) or a redirected behavior where the pet exhibits the behavior toward another target e.g., redirected aggression, urine marking).

Conflict occurs when the pet is motivated to perform two opposing behaviors. This might occur when a pet is uncertain about the outcome (e.g., meeting new people or dogs) or when the owner's responses to the pet's behavior have been inconsistent. Frustration refers to a situation in which the pet is motivated to perform a behavior but is not able to do so. This might occur when a pet is aroused by other animals, people, or prey outside the window. Pets placed in a yard may begin repetitive pacing or barking if unable to

Table 11.1 Expression of compulsive disorders in dogs and cats

Compulsive disorders in dogs	Compulsive disorders in cats
Self-trauma, injurious or self-directed	
Tail mutilation/chewing	Tail mutilation/attacking
Face and neck scratching	Face and neck scratching
Acral lick dermatitis	Symmetrical alopecia (overgrooming)
Compulsive licking or chewing	Hair plucking/pulling
Claw (nail) biting	Claw (nail) biting
Self-nursing	Self-nursing
Flank sucking	
Locomotor, predatory	
Tail chasing, spinning	Tail chase
Pacing, circling	Chasing, predatory sequences
Chasing lights/shadows	Freezing, staring
Rhythmic barking	Excessive vocalization
Freezing, staring	
Fence running	
Neurologic, hallucinatory	
Snapping at air	Fixed stare
Checking rear	Hyperesthesia
Head shaking	
Oral/ingestive	
Pica	Pica
Sucking, e.g., blankets, owner	Sucking wool/owner
Licking – environment/owner	Licking – environment/owner
Polyphagia – voracious eating	
Glugging ¹	
Psychogenic polydipsia	
Social, sexual	
Urine marking	Urine marking
Masturbation	Mounting, humping
Mounting, humping	Penis licking
Penis sucking	

¹Dodman NH, Cottman N. Animal behavior case of the month. J Am Vet Med Assoc 2004;225:1339–1341.

access potential playmates, territorial intruders, or prey. Pets may also be mentally frustrated if they are inhibited from playing, chasing, jumping up, or barking due to previous punishment (Table 11.2).

Maternal deprivation may also lead to stereotypic behavior in young pets due to frustrated motivations to suckle or insufficient social contact. While some of these behaviors

Table 11.2 Glossary of terms

Conflict-induced behaviors	Conflict occurs when the pet is motivated to perform two opposing behaviors (e.g., approach and withdrawal). Because the pet is unable to display the two behaviors simultaneously, a displacement behavior may be exhibited
Frustration-induced behaviors	Frustration refers to a situation in which the pet is motivated to perform a behavior but is not able to do so. The barrier may be physical (as when access to the stimulus is blocked such as when fenced in the yard) or behavioral (the pet suppresses its response because of possible consequences such as punishment). The resultant behavior could be a displacement behavior or a redirected behavior
Displacement behavior	A displacement behavior is a normal behavior shown at an inappropriate time, appearing out of context for the situation, often as a result of frustration or conflict. Displacement behaviors may also be observed in situations of arousal when there is no appropriate outlet for de-arousal. Examples of displacement behaviors include yawning, eating, vocalizing, lip licking, grooming, circling, spinning, tail chasing, grooming, and barking
Redirected behavior	When an animal is motivated to perform an activity (e.g., territorial protection, fear aggression, marking) but is unable (frustrated) to gain access to the principal target, the behavior may be directed at an alternative target (e.g., a nearby person, another animal, or an object)
Vacuum activity	When the pet is highly motivated to perform an instinctive behavior but there is no available outlet, a vacuum activity may be exhibited (flank sucking, licking). These activities have no apparent useful purpose
Abnormal repetitive behaviors	Abnormal repetitive motor patterns that serve no apparent function and whose biological causal factors are unknown
Stereotypies	A stereotypy is an abnormal invariant, repetition of a motor pattern that serves no apparent function. Stereotypies might be induced by conflict, frustration, deprivation, inability to cope, or central nervous system dysfunction
Compulsive disorders	Compulsive behaviors are abnormal and repetitive, that may be variable and have an apparent goal on which the pet may fixate. Unlike displacement behaviors, they interfere with function. They initially arise in situations of conflict but become compulsive when emancipated from the original context. The animal lacks control over the initiation and cessation of the behavior and it interferes with normal behavior, such as eating and social interaction, or is self-injurious

may be transient, some may persist into adulthood.³ Maternal deprivation can also lead to heightened fearfulness, anxiety, and alterations in how the pet responds to stress, which may contribute to a greater potential for the development of stereotypic behaviors when exposed to stressors later in life.³ Conversely, some behaviors may not show up until later in life. Providing optimal housing, adequate social and environmental enrichment, and giving the pet control to engage in desirable behaviors and avoid the undesirable can have positive benefits for all pets but particularly those who are anxious or whose early environment was impoverished.

Stress and conflict can also arise from housing in unnatural, restrictive, or suboptimal environments for the pet's needs. Inconsistent or unpredictable consequences and punishment, especially if inappropriately timed or particularly aversive, can further add to the pet's conflict and frustration. Illness, injury, and inadequate attention to welfare issues such as food, water, temperature control, and freedom from pain or discomfort might also contribute to stress.

Conflict and frustration-induced displacement behaviors are likely to be seen in response to a specific stimulus (e.g., visual, auditory, odor, tactile) or event, and are likely to resolve when the inciting factors are removed. However, owner responses may further aggravate the problem by inadvertently reinforcing the behavior or increasing fear and conflict through the use of punishment. Medical factors may aggravate the problem if the consequences of the behavior (e.g., tail chasing, self-trauma) lead to pain, injury, or infection. In fact, deep infections are often a consequence of self-trauma; therefore both medical and behavioral therapy would need to be instituted concurrently.²³

Constant or repeated exposure to conflict can eventually contribute to the behavior becoming habitual and compulsive. Pathological changes developing in the brain require a combination of environmental and behavioral management as well as drugs to achieve improvement. Owner responses, medical consequences, and the level, frequency, and intensity of stressors can all contribute to whether behaviors become compulsive. Many of these pets have an anxious disposition and genetic factors have been identified.

Inciting factors and early intervention

Providing appropriate and sufficient enrichment in the form of social interactions and play, a predictable and comfortable environment, and predictable consequences that focus on rewarding what is desirable can reduce stress for most pets. However, breed, individual differences, maternal effects, early development, and socialization all play a role in how pets manage stress. If the pet begins to display behaviors that are unusual or out of context, immediate attention to address the underlying cause might prevent the behavior from becoming compulsive (Box 11.1).

Pathophysiology of compulsive disorders

There may be a common pathophysiology for all compulsive disorders but it is also possible that the neurotransmitters involved may vary between presenting complaints or that there may be changing involvement as the problem progresses. Locomotor compulsive disorders such as tail

Box 11.1 Behavioral factors that might contribute to stress, conflict, and compulsive disorders

- Problems with the early environment, including maternal care and handling
- Socialization and environmental localization problems
- Inadequate enrichment and outlets for normal behavior (social interaction, object play, exercise)
- Unpredictable schedule or routine
- Insufficient or inconsistent training and communication
- Excessive, unnecessary, or unpredictable positive punishment
- Housing and environmental problems contributing to lack of environmental control, insufficient outlets for normal behavior
- Frustration and inability to achieve goals
- Conflict and competing motivation, inconsistent owner responses
- Social anxiety – family members moving in/out, new pet, loss of existing pet
- Household anxiety – moving, renovations
- Intense or recurrent situations of fear or anxiety, e.g., noise sensitivity/phobia

chasing tend to develop after repeated conflict, are displayed most commonly in situations of high arousal, and are often so intense that it may be difficult to calm the dog or interrupt the behavior. By contrast, oral compulsive behaviors (such as flank sucking and ALD) may develop more acutely, are most likely to be displayed in situations of minimal or insufficient stimulation, and may sometimes help the pet to cope or settle better. It has been suggested that oral stereotypies might involve the mesolimbic dopaminergic system while locomotor stereotypies may involve activation of the nigrostriatal dopaminergic system.²⁴ Hallucinatory-type behaviors such as fly snapping and pouncing may involve different pathophysiologic mechanisms. There also may be differing levels of cognition ranging from spontaneous, seemingly uncontrollable reactions to pets that search for or fixate on specific targets.

Beta-endorphins, dopamine, glutamate, and serotonin have all been implicated, primarily based on response to therapy. However, it has been suggested that the role of gamma-aminobutyric acid, neuroactive peptides such as cholecystokinin, corticotrophin-releasing factor, neuropeptide Y, and tachykinins such as substance P should also be considered.²⁵

Dopaminergic drugs such as amphetamines may induce stereotypies and dopamine antagonists such as haloperidol may result in suppression of stereotypies.^{26–28} In one study higher prolactin levels were found in dogs with chronic stress, stereotypic behaviors, fear aggression, and autonomic signs, while lower levels of prolactin were associated with acute fearful and phobic events.²⁹ Thus, drugs that enhance dopamine transmission such as selegiline might be indicated in stereotypies associated with chronic stress.

Another possibility is that compulsive disorders are mediated through opioid receptors, since opioid antagonists such as naltrexone have been successful at reducing stereotypies in dogs, sows, and horses.^{27,30–31} In addition, drugs that supply an exogenous source of opiates, such as hydrocodone, have been reported to be effective for ALD.³² It has been suggested that endorphins act as an internal mechanism for reinforcement, and that they might play a role in the

early development of compulsive disorders. However, an increase in blood endorphin levels has not been identified.

Altered glutaminergic neurotransmission may also be a factor, since blocking glutamate-sensitive *N*-methyl-D-aspartic acid (NMDA) with drugs such as memantine or dextromethorphan may be effective.^{33,34}

Abnormal serotonin transmission has been suggested to be the *primary mechanism* by which compulsive disorders are induced. As in human models of OCDs, drugs that inhibit serotonin reuptake (e.g., clomipramine, fluoxetine, fluvoxamine, citalopram) have been shown to be most effective in the treatment of canine and feline compulsive disorders.^{1,10,11–16} Animal studies have also identified direct evidence of serotonin involvement.⁸ In some animal studies, the serotonin reuptake inhibitor citalopram and not the neuroleptic clozapine was effective in reducing stereotypic behavior in female voles.³⁵

In time, it is probable that different neuropathological mechanisms may be identified for different presentations. In fact, another school of veterinary behavior from France believes that abnormal repetitive behaviors arise as a result of a number of different behavioral disorders, including *permanent anxiety disorder*, where the dog is constantly in a state of inhibition and prone to displacement behaviors (which may respond to selegiline, a TCA (clomipramine) or an SSRI); *unipolar disorder*, where the dog may be hypervigilant, overexcitable, and unable to stop behavioral sequences (which may respond to selegiline); *hyperactivity disorder* or attention deficit disorder with hyperactivity (which might respond to methylphenidate, fluvoxamine, fluoxetine, imipramine, or amitriptyline); *deritualization anxiety*, where there has been a change in the social group and the dog becomes withdrawn and overly defensive (which may respond to selegiline); and *dissociate disorders*, where the dog becomes increasingly less receptive and may have hallucinatory events (which may respond to risperidone).³⁶ (See Chapter 22 for further details.)

Diagnosing compulsive disorders

Medical

Diagnosis of a compulsive disorder requires that all possible medical causes that might incite the behavior first be ruled out. For example, neurological signs may be due to partial (focal) seizures; self-traumatic disorders may be due to food intolerance; and oral and ingestive behaviors may be caused by gastrointestinal diseases (see Chapter 6 and below). Feline hyperesthesia is a clinical sign or group of signs that can have dermatologic, neuromuscular, or behavioral causes. For this reason, a variety of therapeutic options have been reported to be effective for the same phenotypic presentation. Therefore, in addition to diagnostic tests, therapeutic response trials with drugs that target a specific medical cause (e.g., food trial, parasite control, seizure medication, gastrointestinal medications) or a specific behavioral cause (e.g., compulsive disorder) may be invaluable in both diagnosis and treatment. However, the diagnosis may be further complicated by the fact that many medications (e.g., memantine, doxepin, clonazepam, carbamazepine, gabapentin, pregabalin), have multiple effects (e.g., pain, seizure, anxiety, compulsive, pruritus). For example, tail chasing and self-trauma,

pawing or scratching of the face, and hyperesthesia in cats may have dermatologic, neurologic, pain (including neuropathic pain), or behavioral causes. Tail chasing has previously been described as pain-induced, an opioid-mediated stereotypy,³¹ a compulsive disorder responsive to TCA and SSRI therapy,¹⁴ a seizure-related neurological disorder,³⁷ or perhaps a disorder similar to human autism.^{20,38}

Another important consideration is that stress, which is an initiating and perpetuating factor in the development and maintenance of compulsive disorders, can also have effects on medical health such as increased inflammation in the skin. Therefore, resolving or minimizing stress is not only essential for the pet's well-being and the resolution of compulsive disorders but also for reducing the medical component that might be contributing to the signs (see [Chapter 6](#)).

Behavioral

If all possible medical causes have been ruled out, controlled, or resolved, and the problem persists, then the history as well as observation of the problem (generally by having the owners bring video recordings) will be required to work up the case further so that an accurate behavioral diagnosis can be made (compulsive, conflict-induced, conditioned, or reinforced) and an appropriate treatment plan implemented. When taking the behavioral history, the consultant should evaluate the details of the problem, as well as any other behavioral signs that might indicate that the stereotypy is part of a larger problem.

The history must include information about:

- The pet, including the signalment, developmental history, and adoption, early socialization and training, and any other concurrent behavior or health problems
- The pet's personality, how the pet responds to different stimuli (e.g., people, animals, locations, situations, noises) and whether there are anxiety or temperament issues
- What methods the owners use for training, including reinforcement (when, where, what, and how), punishment (when, where, what, how, and why) and control products or devices, including collar and type, body harness, head halter, or remote training devices
- The family, including other pets and their relationships, the pet's daily schedule, and the environment, including specific questions on social enrichment and object/toy play
- The problem, how and when it started; how it has progressed or changed; when, where, and how often the problem occurs; stimuli or events that precede the problem; the owner's response and how the dog responds; and a detailed description (including video if available) of the problem, including the sequence of events and the dog's body language; frequency, duration, intensity, situations in which the problems arise and whether the owner can prevent or interrupt it
- Concurrent behavioral problems and somatic signs that might indicate the stereotypy is a component of another problem (e.g., cognitive dysfunction syndrome, attention deficit hyperactivity disorder).

Compulsive disorders must first be differentiated from medical problems that could be causing or contributing to

the signs. However, even if a medical problem is identified, the initiating cause may have been behavioral. If the signs arise *only* in response to the inciting conflict or anxiety, then the problem may not meet the definition of a fully developed compulsive disorder, and treatment might solely require a behavioral approach focused on reducing conflict and teaching acceptable outcomes in situations where the problems arise. When abnormal behaviors are exhibited only in the owner's presence, it is possible that the owner's responses to the behavior are a primary factor in development and maintenance of the problem (conditioned, reinforced, adding to conflict). Other possible differentials are the repetitive, hallucinatory, fixated, or stereotypic behaviors that are seen in the Pageat (French) diagnoses (see [Chapter 22](#)).

Management and treatment of compulsive disorders

Behavioral approach

Treatment of compulsive disorders generally requires the selection of appropriate pharmacological intervention and a behavioral program that focuses on the following:

1. consistent and predictable environment and daily routine over which the pet has control to engage in desirable activities (e.g., resting, perching, object play) and preventing undesirable behaviors (set the pet up to succeed; see [Chapter 4](#))
2. consistent and predictable consequences that use rewards to encourage desirable behavior rather than punishment to discourage undesirable behavior (see [Chapter 4](#))
3. providing sufficient enrichment and outlets to meet the pet's behavioral needs (see [Chapter 4](#))
4. ensuring owner responses do not further reinforce or aggravate the response (e.g., anger, punishment, agitation, inconsistent responses to the pet's behavior)
5. management of the problem and environment to prevent recurrence
6. identification and removal or reduction of stressors that lead to conflict
7. identification and prevention or avoidance of triggers that precede displacement or compulsive behaviors
8. teaching an appropriate desirable behavior to replace the undesirable (response substitution) using reinforcement-based techniques to mark the behavior properly (e.g., clicker or Manner's Minder and food reward) and to repeat until the behavior is captured (i.e., the pet has learned the desired response). An example would be to focus on reinforcement of desirable alternative behaviors to the compulsive behavior, such as resting on a mat or chewing on an appropriate chew toy
9. developing techniques and tools for owner interruption of the behavior each time it is displayed
10. teaching owners to identify triggers and read facial and body language to be able to pre-empt the behavior and direct to an acceptable behavior.

By evaluating the pet's household, daily routine, and the undesirable behavior itself, including when and where it

occurs, and the consequences that arise from engaging in the behavior, a specific program can be designed to reduce stress and conflict and direct the pet into acceptable and desirable alternative outlets. For some problems, such as flank sucking in Doberman pinschers, or the golden retriever that carries towels in its mouth, the problem may be sufficiently benign that treatment may not be necessary or may be more disruptive than the problem itself. If the behavior is a successful coping mechanism for reducing stress or resolving underlying conflict and the owner is addressing the pet's needs effectively, additional treatment may not be warranted unless the pet's welfare is affected or the problem is unacceptable for the owners. However, if the behavior has a negative effect on normal behaviors or leads to secondary medical problems such as pain, inflammation, or infection, then both medical and behavioral approaches will be required.

Predictability and control: environment, routine, and consequences

Pets that develop compulsive disorders may be particularly sensitive to inconsistency or lack of predictability in their daily schedule and in their interactions with the family. Therefore, the daily program should include a regular routine of social interaction with people in the form of reward-based training, play, and exercise, and opportunities for social interactions with other pets (if these are not a source of conflict). Owners might be encouraged to focus on play that simulates the normal activities of the species or breed (e.g., pulling carts, or retrieving for dogs, hunting games for cats). Feeding times should be scheduled throughout the day (rather than free-choice feeding), utilizing feeding toys and foraging stations so that the pet needs to work (or play) and expend energy to obtain food. In fact, working for some of the daily food can be a useful component of treatment. Following social sessions with the owner, the pet must learn to settle or play with its own toys (rest or object play) without the need for owner attention (i.e., learning to accept inattention). Cats can be encouraged to use an elevated area for perching or a cat play center. Dogs can be taken to a resting or bedding area and, if not inclined to nap or sleep, offered enrichment toys (feeding, chew and manipulation toys) that provide novelty and complexity to keep the pet motivated and challenged.

Training – predictable consequences

Training should encourage behaviors that are desirable rather than punishing behaviors that are undesirable. Casual and inconsistent owner interactions should be replaced by a program of predictable rewards where the owners ensure that all rewards, including affection, toys, and food, are given for behaviors that are incompatible with the compulsive disorder (e.g., resting on a mat, playing with a favored toy). See handouts on reward training (Box 4.12, client handout #22, printable version available online) and teaching pets to settle (Box 7.2, client handout #23, printable version available online). Encouraging desirable outcomes helps reduce stress and can be achieved by several means: encouraging settled behaviors; maintaining a calm household; calm and consistent owner responses; and the appropriate use of rewards. Clicker training can help immediately reinforce

desirable behaviors. A leash and head halter for dogs or a harness for cats can be used to prompt the desired response as well as to inhibit, disrupt, or prevent undesirable behavior. The Manners Minder (Figure 7.5) (www.drsophiayin.com) is also a useful device to train dogs to settle on a mat or bed for progressively longer and more relaxed responses. All owner-inflicted punishment must be avoided. Prevention is preferred. If the problem should arise in the short term, disruptive devices or booby traps (to keep pets away from problem areas) might be used, as long as they provide consistent consequences.

Minimizing access to conflict- and frustration-inducing stimuli

Music, radio, TV, or white noise can help reduce anxiety and minimize audible stimuli that might contribute to stress or anxiety. Other products that might help reduce anxiety in some pets include Thundershirt or Anxiety Wraps, Calming Caps, and goggles that reduce visual stimuli, or thunder bands, Mutt Muffs, or sound baffling that reduce audible stimuli (see Chapter 12).

Response substitution

Ideally the owners should be aware of when and where the behaviors are about to arise so that they can proactively or pre-emptively focus on achieving the desirable behavior. If compulsive behaviors arise in the owner's presence, the pet should be interrupted immediately and calmly with a moderate, novel noise then cued to engage in an appropriate alternative behavior (e.g., lie down, go to your mat, play with your toy) which can then be rewarded response (response substitution). If the pet cannot be effectively interrupted, a leash and head halter in dogs or a leash and body harness in cats can be used to interrupt the undesirable behavior and gently guide the pet into the desirable behavior. Owners should not give the reward until the alternative desired behavior is achieved. On occasion, a remote-activated spray collar may be an effective tool for interruption, provided it is used consistently, does not cause fear, and the pet can then be cued to engage in a desirable behavior. When the family cannot be present to interrupt the behavior, some other means of prevention may be needed. Cage confinement or Elizabethan collars (E-collars) may be useful, but these products can further aggravate the pet's anxiety (see Box 11.2, client handout #4, printable version available online).

Drug therapy

Based on human models for the treatment of OCD, drugs that inhibit serotonin reuptake, including SSRIs (e.g., fluoxetine) and TCAs (e.g., clomipramine) have been shown to be most effective in the treatment of canine and feline compulsive disorders and animal studies have identified direct evidence of serotonin involvement.^{1,8,10,13,16,39–41} Clomipramine is the most selective inhibitor of serotonin reuptake of all the TCAs. Clomipramine has been reported to be effective in the treatment of ALD, spinning, and tail chasing.^{1,10,11,14,16} It has also been utilized successfully in compulsive disorders in cats, including psychogenic alopecia.^{46,42} TCAs other than

Box 11.2 Stereotypic and compulsive disorders (client handout #4, printable version available online)

1. Compulsive disorders often arise from situations of conflict or anxiety, but can appear spontaneously for no apparent reason. If the source of the stress or conflict can be identified, it should be addressed. Early intervention, before the problem becomes habitual or complications arise, provides the best opportunity for success. While pets likely have a genetic susceptibility to developing compulsive disorders, reducing sources of stress and providing outlets and opportunities to keep the pet stimulated and enriched can help to prevent the development of these problems or reduce their frequency or intensity. However, when the problem begins to affect the pet's normal daily functions or the problem is too frequent or intense, then it has likely become a compulsive disorder, which generally requires a combination of behavioral management and drug therapy.
2. Medical problems may be the cause of the behavior. Therefore, before diagnosing a compulsive disorder, all possible medical problems must be considered. In addition, if the pet begins to lick or chew at itself, regardless of whether the initial problem was behavioral or medical, the pain and infection caused by the licking will first need to be resolved. Unfortunately, since pets cannot let us know how they feel (i.e., itchy, painful, unable to help themselves) your veterinarian will need to determine this by diagnostic tests and possibly by a medication trial.
3. The treatment program should begin by identifying sources of stress and conflict for your pet and resolving them. By looking at when, where, and in what situations the problem was first seen, it might be possible to identify the stressors that caused the problem, so that these might be resolved. However, while this can be an excellent starting point, when the problem has become compulsive, treating the stress and conflict alone is seldom sufficient. For the behavioral workup and to measure progress, it may be helpful to make a video recording of the problem and keep a diary.
4. If you can determine when the problem is likely to arise and in what situations, it might be possible to prevent the problem or preoccupy the pet with another activity that is incompatible with the undesirable behavior. Environmental enrichment when you are not around should include toys, chews, or other activities that can help to keep the pet occupied and distracted.
 - (a) Cats: Give your cat new places to perch, new areas to climb or scratch, or paper bags or boxes to explore. Some cats will show interest in the television or a video. One way to keep a cat's interest is to find toys that simulate prey so that it has opportunities to hunt, chase, bat, or pounce on the toy. Toys that can be batted along the floor, hung from door frames, or are battery-operated will get the cat's interest if they are the right size and texture and are changed intermittently so they remain novel. Another way to maintain interest is to stuff toys with food, treats, or catnip. Some of the new toys now available are designed to be filled with food, treats, or catnip and require manipulation to remove them from the toy. Some cats are attracted to kitty herb gardens.
 - (b) Dogs: A variety of toys have been developed that can be coated, filled, or stuffed with food to attract and occupy the dog for long periods of time. Interest can be maintained in the toy if it takes time to remove all of the food. The time to empty a toy will depend on how motivated the pet is and what has been placed inside (e.g., liver is more interesting than biscuits for many dogs), texture, and novelty (alternate which toys and treats you use each day). In addition, a hungry dog is more likely to try and get the food out, while a sated dog may have no interest, so try placing some of the dog's meal in the toys. Freezing the toy after stuffing with moist food or treats can increase the duration of time spent chewing. Dogs that enjoy investigating and exploring may be better distracted by games where they have to search to find new toys and treats. Videos designed for dogs to view may be of interest to some dogs.
5. When you are home and available, social enrichment should be offered where the pet gets quality time with you (and vice versa), consistent and regular training to be able to communicate better what you want your pet to learn, as well as exercise and play that meet the needs of your family and your pet. Walks, swimming, jogging, and playing with toys, as well as training, should be the minimum; however, more rigorous games and structured activities such as agility, flyball, retrieving, or herding trials might better meet the needs of some dogs and breeds. For cats, toys for chasing that simulate prey generally work best. Social play with other pets and people can also be encouraged (e.g., dog parks) unless these situations make the pet uncomfortable (see [Boxes 4.6 and 4.7](#)).
6. Provide a predictable environment and routine. It is neither appropriate nor necessary to keep the pet engaged in activities at all times. By providing some regularity and predictability to the daily routine and by providing enrichment at the times when the pet most needs it (especially when it might begin to engage in the compulsive behavior), the pet should be able to settle into a bedding location at various times of the day where it feels comfortable and can relax (safe haven). A favored blanket or stuffed toys, television or white noise, a piece of your clothing, pheromones, or even aromatherapy might help the pet to feel more comfortable and secure. Of course, there is a great deal of variation between individual pets based on their behavioral genetics and anxiety level, but pets can be calmer and more in control if they have a predictable routine and predictable environment where they have choices to engage in acceptable activities and are prevented from engaging in unacceptable behaviors. Any environmental change should be made slowly since some pets are particularly sensitive to novelty and change. Therefore, using similar bedding or litterbox, both familiar toys and new toys that interest and occupy the pet, confining to familiar areas, limiting access to new environments unless you are available to help ease the transition might be considered.
7. Provide predictable consequences and communication. Predictability in rewards (this refers to anything the pet wants) means that the pet learns what behaviors get rewards, which can only be achieved if you are consistent in each response (e.g., we will go out the door only if you sit first, you will get affection only if you sit calmly or lie down at my feet, you will be greeted only if you are quiet and sitting, we will continue to walk forward only if you keep the leash slack, you will get this chew toy only when you lie on the mat). Of course once the behavior is learned it needs to be placed on cue/command so that you can begin to communicate verbally what is desirable and the pet has learned the meaning from previous training and reinforcement. During training, you should also specifically focus on rewarding those behaviors that are desirable alternatives to the compulsive disorder such as go to your mat, down and stay, sit and watch, and come. Any training devices or techniques such as the head halter, body harness, clicker training, or Manners Minder that might be used to aid in the control and treatment of the compulsive disorder should be incorporated. For some pets, training devices can help you obtain and reward desired outcomes more quickly.

Continued

Box 11.2 Stereotypic and compulsive disorders (client handout #4, printable version available online)—cont'd

8. Your response to the pet's behavior is important as some responses can actually aggravate the problem.
 - (a) Positive punishment (application of a stimulus that decreases behavior) should, for the most part, be avoided in pets but particularly those with fear, anxiety, or compulsive disorders. Even if the punishment is consistent and timed properly to suppress the undesirable behavior, it can increase the pet's fear, anxiety, and conflict and may possibly damage the bond between you and your pet. In addition, punishment does not address how the pet should behave in the situation. Punishment can be avoided, for the most part, by supervision, confinement, or pet-proofing to prevent undesirable behaviors.
 - (b) Any attention, whether affection, treats, or toys to try and calm the pet, or even mild attempts at punishment, can inadvertently reinforce the behavior. While it is best to reward desirable behavior and ignore undesirable behavior, if you are unable to prevent the initiation of the stereotypy or compulsive behavior, the focus should be on interrupting the behavior as it first begins and teaching an alternative acceptable behavior (see [Response substitution](#), below).
9. Response substitution and counterconditioning: Ideally the behavior program should reduce or eliminate the expression of further stereotypic or compulsive behaviors. However this may not always be the case. Counterconditioning can be used to change a pet's emotional response to a stimulus. For example, if visitors coming to the home or pets or people on the other side of a fence cause frustration and conflict, a favored reward can be paired with each exposure to make the association with the stimulus positive. However, the most practical way to modify the behavior is to teach the pet an alternative response by interrupting the behavior as it begins and engaging the pet in an alternative behavior which can be reinforced. Reward-trained verbal cues (e.g., come, lie down, go to your mat) and clicker training can be excellent ways to reward desirable behaviors immediately. Pets that cannot be effectively interrupted with verbal cues can be supervised with a leash attached either to a head halter (dogs) or body harness (dogs and cats) to prompt the pet gently to engage in an alternate behavior. Be certain to reward the pet immediately but only after the undesirable behavior has ceased and a desirable behavior is displayed.
10. Other options for interruption might be considered, such as a shake can, ultrasonic device, or remote spray collar, but only if they can be used to stop the undesirable behavior successfully without causing further fear, anxiety, or conflict. Similarly, prevention may be a useful or necessary adjunct to the program to try and break the cycle when the pet cannot be supervised. Sedation or devices that can physically stop the expression of the stereotypic behaviors (such as crates to prevent access to problem areas, tie-downs to prevent repetitive behaviors, Elizabethan collars and bandaging (perhaps with a bitter-tasting coating) for self-trauma, or muzzles for licking, sucking, and picas, may be considered. The pet should be monitored to ensure none of these techniques actually cause aggravation of frustration.
11. Behavioral drugs that help return the serotonin system to a more normal state of function, such as fluoxetine or clomipramine, can also be effective. However, additional drugs that further modify neurotransmitters, anxiolytic drugs, seizure medications, and medications that treat neuropathic pain could also be needed.

clomipramine have not been found to be as effective since they have less effect on serotonin reuptake inhibition. However, in addition to effects on mood and anxiety, other TCAs such as doxepin and amitriptyline have strong antihistaminic effects or may reduce neuropathic pain associated with self-traumatic disorders while a combination of nortriptyline and gabapentin has been shown to achieve good pain relief in humans.⁴³

SSRIs such as paroxetine, fluoxetine, sertraline, fluvoxamine, or citalopram may often be effective. In a study of 13 cases of ALD, improvement was seen with clomipramine (43%), fluoxetine (39%), and sertraline (21%) in comparison to placebo, desipramine, and fenfluramine (a serotonin-releasing agent).¹¹ In other studies significant improvement in ALD in dogs was demonstrated with fluoxetine and citalopram.^{12,13} One study found clomipramine and fluoxetine to be equally effective in improving dogs with tail chasing.²² After 4–6 weeks, if there is insufficient response and no adverse effects, up to double the dose may be needed, but when using these higher doses pets should be monitored for any signs of serotonin syndrome (see [Chapter 8](#)). If the problem improves, the medication should be continued for at least 6 months, but may have to be continued lifelong.

Altered glutamergic neurotransmission may also be a factor in the pathogenesis, therefore using an *NMDA receptor antagonist* to block glutamate-sensitive NMDA may be an effective treatment option. In one case series, memantine, an NMDA receptor antagonist, reduced the severity of

compulsive disorders in 64% of 11 treated dogs within 2 weeks of treatment.³³ Memantine may be effective alone or may have a synergistic effect when combined with fluoxetine.⁴⁴ Dextromethorphan may also be useful because of its NMDA-antagonist properties.³⁵ However, due to its short half-life, rapid clearance, and variable absorption in dogs, it may not be a reliable form of therapy.⁴⁵

Opiate antagonists such as naltrexone and naloxone have also been reported to be effective in some cases, perhaps due to differing pathology with perhaps greater effect in the early stages of the disorder or by blocking the release of endorphins released during stereotypic behaviors such as self-trauma. In one case of compulsive tail chasing, an injection of naloxone 0.01 mg/kg was reported to be effective within 20 minutes and clinical improvement was maintained for 3 hours.³¹ In another study injections of nalmefene or naltrexone reduced chewing, licking, and scratching in dogs with ALD, atopy, and other causes of pruritus for up to 3 hours after injection. In a study using oral naltrexone for ALD at 2.2 mg/kg once or twice daily, improvement was seen in 7 of 11 dogs, but all dogs relapsed after treatment was stopped.⁴⁶ On the other hand it has been suggested that there is low oral bioavailability and inconsistent therapeutic value, and that the active metabolite 6-beta naltrexol is not formed in dogs.^{30,47}

A *monoamine oxidase inhibitor*, such as selegiline, may be another consideration for pets with stereotypic behaviors since chronic stress has been associated with elevated

prolactin.²⁹ Selegiline is licensed in Europe for emotional disorders which are often associated with states of chronic anxiety and concurrent physical signs, including alterations in eating, drinking, sleep, or elimination (see Table 22.3). It has also been reported to be effective in cats with emotional disorders, including stereotypic self-licking.⁴⁸

Since dopamine agonists such as apomorphine and amphetamines can induce stereotypic behavior and antipsychotics have been effective in treating stereotypies in other species, it is perhaps surprising that antipsychotics such as haloperidol have not proven to be effective for stereotypic behaviors in pets.^{26,27,49}

Drugs that might be effective in combination with an SSRI or clomipramine include:

- buspirone or tryptophan (which may serve to increase the serotonin pool); however caution should be taken to monitor for signs of serotonin toxicity
- gabapentin, pregabalin, or carbamazepine which also might act on partial seizures, neuropathic pain, or anxiety
- clonazepam (or other benzodiazepines such as lorazepam or diazepam) which might have effects on anxiety or as adjunct therapy for partial seizures
- tramadol (caution should be taken to monitor for signs of serotonin toxicity), opioids, or meloxicam, for concurrent pain
- phenobarbital, potassium bromide, or levetiracetam for temporal lobe epilepsy or partial seizures
- SSRIs and TCAs have cautiously been used together by some behaviorists – lower doses must be used and pets must be carefully monitored for serotonin syndrome.

For drug doses, see Table 11.3 and Appendix D.

Pheromones, L-theanine, alpha-casozepine, Hormonease, melatonin, aromatherapy, valerian, and other natural supplements might also be used concurrently to reduce underlying anxiety further, although compelling evidence for efficacy is lacking (see Chapter 9).

Prognosis

Since there is such a wide spectrum of possible presentations, the prognosis is variable. When owner responses and medical conditions have contributed to the problem the prognosis should be good for improvement, i.e., if the medical problems are treatable. If an accurate diagnosis can be made, then it should be possible to implement a program that controls or improves the problem. For compulsive disorders with no complicating medical factors, it may take some time and effort to find the best combination of behavior therapy and drugs to be able to control the problem effectively and long-term ongoing treatment is likely to be required, especially when there are underlying genetic factors.

Prevention

1. Provide consistent and predictable family–pet interactions using a positive approach to training and communication. Predictability in rewards means that the pet learns what behaviors get rewards, which can only be achieved if the family is consistent in each

Table 11.3 Drug therapy for compulsive disorders

Drug	Dog	Cat
Clonazepam	0.1–1.0 mg/kg q8–12 hours	0.02–0.2 mg/kg q12–24 hours
Other benzodiazepines	See Appendix D	See Appendix D
Amitriptyline	1.0–4.0 mg/kg q12 hours	0.5–1 mg/kg q24 hours
Clomipramine	1–3 mg/kg q12 hours*	0.3–0.5 mg/kg q24 hours
Doxepin	2–5 mg/kg q12–24 hours	0.5–1 mg/kg q12–24 hours
Nortriptyline	0.5–2 mg/kg q12 hours	0.5–2 mg/kg q12 hours
Fluoxetine	1.0–2.0 mg/kg q24 hours *	0.5–1.5 mg/kg q24 hours
Sertraline	1–3 mg/kg q24 hours* (or divide q12 hours)	0.5–1.5 mg/kg q24 hours
Fluvoxamine	1–2 mg/kg q24 hours*	0.25–1.0 mg/kg q24 hours
Citalopram	1 mg/kg q24 hours*	0.5–1 mg/kg q24 hours
Paroxetine	0.5–2.0 mg/kg q24 hours*	0.5–1 mg/kg q24 hours
Naltrexone	1–2.2 mg/kg q12 hours	25–50 mg/cat q24 hours
Carbamazepine	4–8 mg/kg q8–12 hours	2–6 mg/kg q12–24 hours
Phenobarbital	2–5 mg/kg q12 hours	1–3 mg/kg q12 hours
Gabapentin	10–30 mg/kg q8–12 hours	3–10 mg/kg q12 hours
Pregabalin	2–4 mg/kg q8 hours	1–2 mg/kg q12 hours
Potassium bromide	20–40 mg/kg daily or divided q12 hours	Not recommended
Levetiracetam	5–30 mg/kg q8–12 hours	10–20 mg/kg q8 hours
Selegiline	0.5–1 mg/kg q24 hours in morning	0.5–1 mg/kg q24 hours in morning
Memantine	0.3–1 mg/kg q24 hours	
Dextromethorphan	2 mg/kg q6–12 hours	0.5–2 mg/kg up to q8 hours

*Higher doses may be required for treatment of compulsive disorders with cautious oversight for any signs of serotonin syndrome (especially if combining with other drugs that might enhance serotonin transmission).

response (e.g., we will go out the door only if you sit first, you will get affection only if you sit calmly or lie down at my feet, you will be greeted only if you are quiet and sitting, we will continue to walk forward only if you keep the leash slack, you will get this chew toy only when you lie on the mat).

2. Avoid positive punishment since it can cause fear and bruise the bond with the pet. Positive punishment can be especially problematic if it is harsh and used inconsistently. This can cause conflict and anxiety and can worsen compulsive behavior. Punishment can be avoided by supervision, confinement, or pet-proofing to prevent undesirable behaviors, and rewarding alternate desirable behaviors.
3. Provide an environment that is secure, comfortable, and stimulating and meets the pet's needs. This should include comfortable bedding or resting areas, enrichment toys, opportunities for climbing and exploration for cats (paper bags, boxes, perches), and scratching areas for cats. Catnip, chew products for dogs, manipulation and hollow toys which can be stuffed with food, and scavenger hunts for treats can provide mental stimulation and contribute to an enriched environment (Figures 4.9, 4.10).
4. Provide sufficient social enrichment at times that are most suitable to the owner and pet. This should include quality time together such as positive training, play, and exercise. Weekly explorations of various parks and environments provide enjoyable shared activity. Social play with other pets and people can also be encouraged (e.g., dog parks) unless these situations make the pet uncomfortable.
5. Some degree of structure in the pet's schedule and routine can increase predictability and decrease conflict.
6. Genetics, healthy maternal behavior, gentle handling, socialization, and exposure to environmental stimuli during early development and through the sensitive, socialization period can have a strong influence on future behavior. Therefore, these should be considered when first obtaining a pet and in particular through the first few critical months with the pet when it learns about its new home and family (see Chapters 2 and 4).
7. Have owners report not only any signs of physical illness but also any changes or abnormalities in behavior as soon as they arise for proper diagnosis and early advice and treatment. In most cases, the longer a compulsive behavior exists, the more difficult it is to treat.

CASE EXAMPLE

Rocky was a 3-year-old male neutered Lhasa apso who barked incessantly and chased his tail whenever the owner entered the home. The problem began about 1 year earlier during a time when Rocky had a lapse in housetraining and for several weeks in a row the owner frequently punished Rocky upon arriving home and finding a mess in the house. Rocky would start to approach the owner, then back away and run in circles while barking. The owners admitted that at the start they had found the tail chasing "funny" and "cute" and had encouraged the behavior. When the behavior became incessant, the owner then attempted to calm Rocky down by patting or lifting him, but recently had resorted to interrupting the behavior by feeding Rocky as soon as the behavior started.

The barking and tail chasing had initially developed as a result of conflict at the time of owner arrival since he was motivated to greet the owner but fearful of being punished. The owner's attention then further reinforced the behavior. A review of reward-based training and a few sessions with a reinforcement-based trainer were recommended to help Rocky learn desirable behaviors, including down-stay, sit and focus, and mat training, that might then be used each time a problem might arise. Each time Rocky approached for anything of value (food, play, or attention), the owners were advised to use one of the commands predictably and consistently (sit or

down-stay) to reduce Rocky's arousal and to teach him proper greeting behaviors that would earn rewards. If Rocky could not be successfully interrupted with a command, the owner was to leave a leash attached to a body harness (with a front attachment) to break the cycle of circling and to provide the owner with a way to get Rocky's attention so that he could be successfully settled into a sit or taken to his mat, which were behaviors that would be rewarded with favored treats such as freeze-dried liver. In addition, the owners were advised to ignore Rocky completely at homecomings until he calmed down. After a few weeks of success with obedience training the owners began to apply the retraining techniques. When the owners first entered the home, they were instructed to hold out a piece of freeze-dried liver as a cue and to command and lure Rocky to his bed to lie down. If he did not follow, they were to ignore him until he settled or attach a leash to guide him to settle on his mat.

Since Rocky continued to circle even when ignored or while trying to attach the leash, the owners were advised to try entering the home through the side door and head directly to his dog bed where a bowl of food rewards was located on a counter nearby. His change in routine along with favored rewards provided the owners with a way to break the cycle as Rocky followed them to the bed and lay down for the rewards.

Specific presentations

Although general approaches to treating compulsive disorders apply to each presentation, there may be additional considerations with respect to both diagnosis and treatment depending on whether the signs are neurologic, locomotor, dermatologic, or ingestive.

Compulsive disorders with neurological and locomotor signs

Some of the most difficult and frustrating cases to diagnose as compulsive disorders are those that include signs that could be of neurologic origin, such as fly snapping, tail chasing, pouncing, fixed staring, tail chasing, star gazing,

head shaking, spinning, checking, and the tremors of boxers, bulldogs, Doberman pinchers, and great Danes. Similar feline conditions include staring, and pouncing, chasing, and hunting behaviors toward "imaginary prey." When no other medical causes can be identified, this leaves the clinician to determine whether the problem is a compulsive or neurologic disorder. Pets with primary neurological diseases may present with no other medical signs or neurologic deficits. Simple partial seizures are due to cerebrocortical disease but do not have altered consciousness while partial complex seizures may have behavioral signs including aggression or "hallucinatory signs," but also some degree of altered consciousness.

For circling and spinning behaviors, peripheral neuropathies must also be ruled out. Although hydrocephalus has been suggested as a contributing factor in spinning bull

terriers, a causative relationship has not been established.^{37,38,50} Partial complex seizures have also been suggested as a possible cause of spinning which might improve with anticonvulsants.²⁰ A recent study comparing 145 tail-chasing bull terriers to 188 unaffected dogs found that males had an increased susceptibility for tail chasing and that associations were made with anxious behavior, episodic aggression, and trance-like staring. While these signs are most likely associated with a compulsive disorder or partial complex seizure, some similarity between the condition in bull terriers and human autism has been speculated.²⁰ Treatment with anticonvulsants, serotonin reuptake inhibitors (SSRIs, TCAs) or both might be used; however many cases have proven refractory, especially when there are other concurrent problems and risks such as aggression.

Cavalier King Charles spaniels with syringomyelia accompanied by a Chiari-like malformation (where there is a mismatch between a brain that is too big and a skull that is too small with the cerebellum and medulla pushed into the foramen magnum) can have neuropathic pain. Diagnosis can be confirmed by computed tomography scan or magnetic resonance imaging. Signs might include face and neck scratching, paw licking, and unusual positioning of the head and neck. However, circling and fly biting have also been reported in Cavalier King Charles spaniels, and this may be a result of the malformation but is more likely a compulsive disorder; in other words, both conditions could exist concurrently.⁵¹ Treatment options for clinical signs of Chiari malformation include corticosteroids or nonsteroidal anti-inflammatory drugs, drugs for neuropathic pain including gabapentin, drugs to reduce cerebrospinal fluid such as furosemide, cimetidine, and omeprazole, and possibly surgery.⁵² It is also likely that other breeds develop this malformation leading to similar clinical signs.

When diagnostic testing is unable to yield a definitive diagnosis, the clinician may need to take into account all presenting signs, breed, signalment, history, and the extent to which other differential diagnoses have been ruled out to determine how best to treat the problem. Monitoring response to therapy may be the next best option for the patient, the client, and the veterinarian to be able to control the signs and make a presumptive diagnosis.

Therapeutic trials

1. When the behavior is associated with a loss of consciousness or motor signs then a seizure should be considered and a clinical trial with seizure medication performed. Pets that appear to have an aura, an ictal stage in which the behavior appears and a postictal stage, or when the signs persist into the interictal interval may also improve with seizure medication. However, when there are no psychomotor signs and no loss of consciousness, a partial (focal) seizure might still be a possible cause; therefore a trial with phenobarbital, potassium bromide, or levetiracetam might be an option, while clonazepam, gabapentin, pregabalin, or carbamazepine alone or in combination with other seizure medications might be added for refractory cases.⁵³
2. When neuropathic pain is a consideration a trial with gabapentin, carbamazepine, or perhaps amitriptyline

might be warranted alone. However, self-trauma would most likely be a concurrent sign, such as in tail mutilation, if the problem were due to a neuropathy.

3. To rule out a possible compulsive disorder, another option would be a trial with clomipramine or fluoxetine. However if a neurologic cause has not been ruled out there is the potential that TCAs, or to a lesser extent SSRIs, could potentiate seizure conditions.
4. For tail chasing, efficacy has been reported using fluoxetine, clomipramine, naloxone, memantine (alone or in combination with fluoxetine), and dextromethorphan.^{1,14,22,31,33,41}

For drug dosages, see [Table 11.3](#) and [Appendix D](#).

Compulsive disorders with ingestive signs

Licking, chewing, sucking, pica, and polyphagia

Unusual oral behaviors, including licking, sucking, pica, and smacking lips, or gulping can be stress-induced or compulsive; however, medical differentials would include partial complex seizures, gastrointestinal disorders, and owner-conditioned behaviors. In a recent study of dogs with excessive licking of surfaces, gastrointestinal disorders, including eosinophilic and lymphoplasmacytic infiltration, delayed gastric emptying, irritable bowel syndrome, giardiasis, pancreatitis, and gastric foreign bodies, were identified and the problems in 9/18 dogs were completely resolved after medical treatment.⁵⁴ The presence of other concurrent gastrointestinal or neurological signs might also help to differentiate medical from behavioral. A trial of drugs such as gastrointestinal protectants, H₂ antagonists, proton pump inhibitors, or dietary management such as with a limited antigen, hydrolyzed protein, or low-residue diet might be needed to rule out a potential gastrointestinal cause for oral behaviors.

Picas, sucking, and chewing in dogs and cats might include ingestion of items commonly found in the household such as rubber bands, electrical cords and cables, wallpaper, wood, items from the garbage, leather shoes and gloves, fabrics, children's toys, baby bottle nipples, and plants. Cats also seem to be attracted to string and thread. While these behaviors might appear obsessive and could lead to foreign-body obstruction or injury, they are often a variant of normal exploration, scavenging, and chewing for which the pet does not know the potentially harmful ramifications and for which there may be insufficient acceptable outlets. Reinforcement by the owners (e.g., chasing the pet) and self-reinforcement where the taste or texture is appealing may further increase the repetition of these behaviors. When targets of the pica have no obvious odor, taste, or texture appeal; the behavior is exceptionally excessive and out of context; the animal is very focused and obsessed about performing the behavior; and it has not been influenced by owner responses, then a stress-induced pica or compulsive disorder is a consideration.

To diagnose a pica as a compulsive disorder, medical causes (gastrointestinal disease, nutritional deficiencies, metabolic diseases, drugs that increase appetite, CNS disturbances, cognitive dysfunction) should be ruled out. Pets that

are underfed and those placed on calorie-restrictive diets may begin to seek out new items to eat. Anxiety disorders and phobias may also cause destruction of household objects; however ingestion is less common. In cats, a genetic predisposition has been identified in Burmese and Siamese with sucking or ingesting target preferences distributed as 93% wool, 64% cotton, 53% synthetic fabrics, 22% rubber and plastic, and 8% paper and cardboard.¹⁹ Pica in cats was most commonly observed either within 2 months of rehoming or between 6 and 18 months of age (i.e., at the time of sexual or territorial maturity).

Management and treatment

For specific treatment, see the section on management and treatment of compulsive disorders, above, and [Box 11.2](#) for clients. The family needs to focus on reducing sources of anxiety and conflict, increasing predictability and enrichment, and identifying stimuli or situations that might incite the problem.

Specific recommendations for obsessive licking, sucking, chewing, or picas include:

- Supervision to keep the pet engaged in desirable exploration and play and to prevent or interrupt undesirable behavior, perhaps with a leash and harness, or leash and head halter left attached
- Ensuring that the area is pet-proofed or the pet is confined away from possible targets when the family cannot supervise or the use of a muzzle in dogs. Prolonged avoidance may decrease interest provided other outlets are provided
- Increasing oral stimulation by stuffing or freezing dog toys with food, increasing dietary bulk (fiber, roughage), increasing oral stimulation with dental food and treats, toys with chews attached such as the Bouncy Bone (Premier Pet Products) ([Figure 4.8](#)) or bones with meat or grizzle (provided they are large enough that the dog does not swallow and not too dense to fracture teeth). Food toys that require manipulation to obtain each piece of food and games of food hide and seek can greatly slow eating for pets that bolt their food. Placing toys amongst the dry food inside the food bowl can slow eating by making the pet remove the toys or eat around the toys to get its food. The new Buster DogMaze can also greatly slow feeding.
- For wool. Sucking in cats, providing sheepskin or objects made of wool to suck and chew may be an acceptable alternative if the cat does not ingest large amounts.

Psychogenic polydipsia

Increased drinking and urinating are most often due to medical causes. Water intake measurement and urine concentration should first confirm that there is indeed an excess in drinking and urination. Differentials include diabetes mellitus, chronic kidney disease, pyometra, hypercalcemia, hepatic insufficiency, pyelonephritis, Cushing's disease, hypokalemia, hypoadrenocorticism, hyperthyroidism, and iatrogenic causes. While both central diabetes insipidus and primary polydipsia (psychogenic) are rare, a positive response to desmopressin acetate (DDAVP) would be very suggestive

of a medical cause, most likely diabetes insipidus, although Cushing's syndrome could still be a possibility.⁵⁵

Management and treatment of behavioral polydipsia

While water intake will need to be limited if a psychogenic cause has been confirmed, for long-standing problems reduction to acceptable volumes might be attempted over several weeks to help the pet cope better while behavior and drug therapies are implemented. Owners should keep a diary to determine when the pet is likely to seek water and engage the pet in other productive activities at these times (social times, play and exercise, training, object play). Food, treats, and chews should be selected that are low in sodium. Excessive drinking can be prevented by restricting water access to measured amounts at scheduled times throughout the day, teaching the dog to leave its water bowl to engage in other activities (and to ensure drinking behaviors are not inadvertently reinforced), and with the use of ice cubes, frozen food treats, drinking bottles, self-watering devices, and drinking bowls (e.g., Drinkbetter) that can slow and limit drinking (see [Box 11.2](#)).

Compulsive disorders with grooming and self-traumatic signs

Self-traumatic disorders, including biting, chewing, licking, or excessive barbering, can lead to skin lesions and alopecia. Medical differentials include diseases that lead to pain or pruritus (e.g., hypersensitivity reactions, neuropathies), infections (e.g., bacterial, fungal, parasitic), endocrinopathies, tumors, or skin disorders associated with systemic diseases (e.g., hepatocutaneous syndrome). When there are primary lesions or if the problem is accompanied by scratching, a medical cause is most likely; however, when there are no primary lesions medical and behavioral causes are still a strong possibility but may be particularly difficult to differentiate.

Dogs

Acral lick dermatitis, claw (nail) biting, head and face scratching, tail mutilation

For ALD in dogs, or other self-traumatic disorders, a physical examination, blood and urine screening, and a dermatologic workup, including a skin scraping, fungal culture, cytology, radiographs, and biopsy, may all be indicated. When diagnostic tests do not reveal the underlying cause, therapeutic trials with antibiotics, pain medication, anti-inflammatory drugs, parasiticides, and/or food trials may be necessary. In some cases complete resolution can be achieved with long-term antibiotic therapy alone (often for 4–12 weeks, and sometimes longer), indicating that even if the original cause was behavioral, that infection was the maintaining factor. Owner supervision and preventive mechanisms such as bandaging or E-collars may also be necessary to allow the lesions to heal. In one study in which biopsies were obtained from 31 ALD lesions, bacteria were isolated from 30 of 31 cases. In only 8 of 22 cases (36%) were superficial cultures consistent with deep cultures and 48% of deep cultures were multidrug-resistant, with 20% methicillin-resistant.²³ In another published account, 6 dogs presumed to have ALD



Figure 11.1 Acral lick dermatitis: self-trauma to the foreleg of a dog.
(Reproduced with permission from Ackerman L. *Practical canine dermatology*. American Veterinary Publications, Goleta, California, 1989.)

were diagnosed with other issues, including lymphoblastic lymphoma, irritation from a Kirschner pin, furunculosis, a mast cell tumor, leishmaniasis, and sporotrichosis.⁵⁶ For claw (nail) biting, any disease of the claw or claw beds (immune, inflammatory, or infectious, including in particular *Malassezia*) must first be ruled out (Figure 11.1).

Flank sucking, which is primarily seen in Doberman pinschers, might have a dermatologic component but is most likely to be a behavioral disorder (related to blanket sucking) for which a genetic component has been identified.^{7,18} The dog may grab a section of flank skin in its mouth and hold the position, resulting in changes as simple as a dampened, ruffled haircoat, to more severe changes, including raw, open sores, necessitating treatment with antibiotics and preventive measures such as E-collars in some cases in conjunction with behavior therapy and drugs.

Management and treatment

Treatment of canine self-trauma requires the same approach as other compulsive disorders, discussed above. The behavior history should identify when the problem began and what might have been the inciting factors. Owner responses and attempts to correct the factors that are contributing to the problem must be identified and removed. When there are identifiable medical problems, their involvement as an initiating factor or as a secondary complication will need to be determined; regardless, any pain, inflammation, infection, or other medical issues will need to be treated. Specific stressors in the home should be identified so that these can be resolved. Enrichment should be scheduled to provide alternative acceptable outlets for the behavior, especially at times when the self-trauma might be displayed. Alternate acceptable behaviors such as resting with head down, or chewing on appropriate toys, should be reinforced. Clicker training can help to mark, reinforce, and shape progressively more desirable behaviors. If the pet begins to engage in the undesirable behavior, it should be given no social feedback at all, including scolding, consoling, obedience

cues, or eye contact. The pet should be calmly interrupted with a novel noise or tug on the lead. If the behavior stops for 10 seconds (longer if possible), the pet can then be given a toy filled with food, exercise, or play. An E-collar, bandaging, and topical anti-inflammatories might also be required to help the lesions to heal. SSRIs (e.g., fluoxetine, paroxetine, or citalopram) or TCAs (e.g., clomipramine) are generally the drugs of choice. If there is an apparent pruritic component, amitriptyline may be a consideration in some cases because it is a mild serotonin enhancer as well as having strong antihistamine activity. Higher doses or combinations of these drugs may be required under careful supervision if there is insufficient improvement. The addition of other drugs and natural products to reduce anxiety further or adjunctive therapy with NMDA antagonists, such as memantine or dextromethorphan, might be considered (see [drug therapy](#), above, for details). Drugs such as doxepin have also been reported previously to be useful in treating ALD but it is likely that, while there may be some behavioral effect, the strong antihistaminic effects may be beneficial for some dogs.

Cats

Self-trauma and psychogenic alopecia

Cats spend between 30% and 50% of their awake time grooming. It is an important maintenance and social behavior.⁵⁷ Grooming can also be a displacement behavior during stress and conflict.⁴² In some cases cats overgroom themselves to the point where alopecia and even skin lesions develop. However, medical problems are often the primary or sole reason for hair loss. When presented with a cat that has hair loss, licking, or scratching, the diagnostic workup should begin with an examination, anal sac expression, blood and urine testing, and a viral profile. The dermatologic evaluation would continue with a trichogram, fungal culture, skin scraping, and possible biopsy. Assuming no abnormal findings, this does not yet confirm a behavioral cause since parasitic hypersensitivity, adverse food reactions, and other hypersensitivity reactions may have similar presentations with hair loss and no skin lesions. Therefore a therapeutic response trial with novel or hydrolyzed protein diets for at least 8 weeks, a parasite control trial, and corticosteroid trials might be used sequentially or together to rule out pruritic causes. Using this protocol in 21 cases presented for psychogenic alopecia, 76.2% had a medical etiology, 9.5% were compulsive, and 14.3% were combined medical and behavioral. A combination of adverse food reaction and atopy (6 cases) was the most common diagnosis. Some cats had atopy, parasitic hypersensitivity, or an adverse food reaction alone. Although biopsies indicated an inflammatory response for most medical cases, some cats with histologically normal skin still had a medical cause.⁵⁸

Tail attacking and mutilation may have a behavioral cause but numerous medical differentials must first be ruled out. Tail mutilation may begin as a play behavior or a conflict-induced behavior in which the cat circles and chases its tail. However, should the cat bite into its tail, the resultant pain, infection, and possible neuropathy could incite further chewing and attacking. Skin disease, trauma, spinal pain, and other neuropathies could initiate the behavior or be a secondary contributing factor.

CASE EXAMPLES

Case 1

Twilight, a 2-year-old, spayed female 37-kg Labrador retriever, was presented for a 2-cm thickened ulcerated lesion on the left foreleg. The owner had had a baby 2 months prior to the onset of the problem but the initial licking had started intermittently approximately 4 months previously. During the past month the licking had been constant. Yelling at the pet was only successful in distracting it temporarily. Prior to the pregnancy, the female owner and the dog often jogged together and spent a lot of time in the park. The pet had minimal training and was not consistently responsive to any verbal cues. Since the baby was born, the pet could not be successfully settled and the owner frequently found herself scolding the pet. A thorough medical workup including blood, urinalysis, thyroid screening, skin scrapings, cytology, and fungal culture uncovered no other problems. The skin appeared indurated and superficially eroded with evidence of suspected deep infection; an aspirate from the lesion was submitted for culture and sensitivity. Since Twilight also had evidence of folliculitis and mild cheilitis, both behavioral and dermatologic therapy was suggested. Twilight was already on a monthly topical flea and heartworm medication and was placed on an 8-week course of antibiotic on the basis of culture and sensitivity, as well as a commercial novel protein kangaroo and oat diet. The owners were instructed that they were to give at least 50% of the food out of feeding toys or as training treats. The owners filled food toys with a mixture of oatmeal and dog food, and occasionally purchased some rabbit meat and pumpkin to use as fresh treats.

Behaviorally, the owners were instructed to focus on reducing the conflict and anxiety associated with the dog's change in routine which had unintentionally decreased the quality of daily life and altered the relationship with the owner. The owners were encouraged to alternate in taking the pet on at least one long walk each day, and to hire a dog-walking service to provide a second daily walk with a group of dogs. The owners were shown how to train sit, lie down, and stay on command using food lures and a head halter. Toys filled with food were provided during times when the pet was likely to lick, and when the baby was present. When not supervising, the owners were to apply an E-collar to allow the lesion to heal and attempt to break the cycle. Close supervision and pre-emptive measures were to be used and all punishment was to cease. The family was told that if the pet began to lick, they were to say nothing, look away, and tap a table top or the floor to interrupt it. If the pet stopped for 10 seconds or more, they were to provide a toy filled with food for the pet to lick instead of its leg, play with it, or take it for a walk. They were also told to ignore attention-soliciting behavior, and when the pet stopped for 10 seconds or more, they could ask it to sit for some attention or a toy. After walks, training, and play the owners were advised to develop a consistent routine where they could provide Twilight with toys filled with food or rabbit meat on her mat while they attended to the baby.

After 8 weeks all skin problems were resolved except the lesion on the foreleg, which was mildly improved. Whenever the owners were unable to supervise and Twilight was not actively engaged with toys or food, she would begin to lick at the site. When they were present, they could interrupt the behavior. Antibiotics and diet were extended for an additional 4 weeks and fluoxetine (64 mg daily) was dispensed. The leash and head halter were to be left attached so that the pet could be more immediately interrupted and redirected to an appropriate outlet. After 4 weeks the owners noted that the licking had virtually ceased at any time the dog was supervised and verbal commands were sufficient to keep her attention. The E-collar was only used at night. At this point Twilight was challenged with her original food while antibiotics were continued. After 4 more weeks on fluoxetine the skin remained well controlled, the lesion had virtually healed, and the E-collar was only left applied at nights or when the owners were away from home. Over the long term, attempts at reduction in dose of fluoxetine led to recurrence and it was still in use at 2-year follow-up. Recurrence of skin lesions could be controlled with antibacterial shampoos and conditioner.

Case 2

Tyson, a 7-year-old neutered male domestic short-haired cat, had a 2-year history of hair loss along the belly and the posterior surfaces of all four legs. After an extensive diagnostic workup and minimal response to treatment trials with oral corticosteroid trials and flea treatments, he was referred to our behavioral service but was first "rerouted" to our staff dermatologist. The owner agreed to take part in a clinical trial in which a systematic approach to diagnostics would be followed. The blood and urine tests were normal, no abnormalities were seen on physical examination, and the trichogram revealed that the hairs were predominantly in anagen (growth phase) but had been broken by licking. A skin biopsy showed no evidence of any underlying cause (mild perivascular inflammation presumed due to licking) and the dermatophyte culture and skin scrapings were negative. A parasiticide response trial and an 8-week trial with a hydrolyzed protein diet trial achieved an improvement of over 50%. The food was continued and a corticosteroid-response trial was initiated (20 mg methylprednisolone acetate SQ). After 3 weeks, all licking had ceased and hair regrowth was occurring at all sites of previous hair loss. At this point a second injection was given but Tyson was challenged with his original diet and within 2 weeks licking and hair loss had resumed. Over time and through challenge feeding, it was determined that Tyson could not tolerate beef or pork, but could be completely controlled with a single antigen diet of chicken and rice, chicken, or pieces of game meats as treats, and low-dose oral prednisolone therapy ranging from daily to twice weekly depending on season. Although there had been no skin lesions and the referring veterinarian had suspected a behavioral diagnosis, Tyson's diagnosis was a combination of adverse food reactions and atopy (Figure 11.2).

Case 3

Sassy, a 6-kg, 4-year-old female spayed Burmese cat, was referred for psychogenic alopecia and was subsequently referred to our dermatology service to rule out underlying skin disease. Although Sassy was occasionally allowed outdoors she preferred to stay indoors, resting on the top of the couch, looking out the window. She occasionally played with the other cat in the home and there were few, if any, reported conflicts. Both cats were fed free choice, had kitty grass to chew, and were given play sessions with chase toys and catnip every few days. Approximately 1.5 years earlier, Sassy began pulling out her hair on her belly, midback, and both hind legs, and fleas were diagnosed. However, after treatment of both cats, the hair loss and licking in Sassy continued and Sassy's skin could be seen rippling along the back as often as once daily, after which she would lick herself incessantly. After the full dermatologic workup, food trial, parasite control, and corticosteroid therapy (as detailed in case 2 above), there was no improvement in the hair loss or hyperesthesia. After reviewing the behavior history with the owners, the only apparent stressor was that the husband did not want Sassy on the couch and would punish her by yelling or block her access by placing an upside-down plastic carpet runner (nubs up) on the couch.

Feeding toys, daily play sessions with chase toys, a new perching area, and avoiding further punishment were discussed and Lucy was placed on 5 mg clomipramine daily. After 2 weeks the owners reported that hyperesthesia had ceased. At a follow-up visit at 3 months there was good hair regrowth, no further hair loss or hyperesthesia, and the owners had ceased all punishment but had initiated only minimal additional play. Attempts to reduce the clomipramine to every-other-day therapy and an attempt at transdermal clomipramine therapy both led to recurrence and an oral dose of 5 mg daily PO was still being used at 18-month follow-up (Figure 11.3).

Another syndrome that might have a behavioral or medical cause is excessive scratching, especially in the area of the head, face, and mouth. In cats and possibly dogs, a neuropathy may cause head, muzzle, or neck scratching. Feline orofacial pain syndrome may also present with signs of oral discomfort and tongue mutilation. A breed disposition in Burmese cats has been reported.⁵⁹ Dental disease, dermatologic disease, trigeminal neuropathy, and behavioral factors should all be considered; however in most cases treatment will need to focus on reducing the neuropathic pain with drugs such as gabapentin along with concurrent anti-inflammatory, pain, and behavioral medications for anxiety and stress.

Management and treatment

Treatment should focus on identifying the underlying cause, often with the aid of a therapeutic response trial. Compulsive disorders will require a program of predictability, enrichment, and identifying and eliminating stressors that might cause or contribute to the problem (discussed previously). Temporary use of E-collars or bandaging might also be required to prevent further self-trauma; however, these might further contribute to the pet's stress. The family should make a journal to determine when the problem is most likely to arise so they can provide entertaining distractions and alternative activities in a timely manner. While clomipramine and fluoxetine are likely to be effective if the diagnosis is a compulsive or conflict-induced behavior, concurrent medications might be needed if there are also elements of pain, neuropathic pain, or other medical conditions.^{1,40,42}

Hyperesthesia in dogs and cats

Feline hyperesthesia syndrome

This is a poorly understood condition that possibly has neurological, dermatological, pain, and behavioral components.⁶⁰ It is also known as rippling, rolling, or twitching skin disease. The clinical picture varies between cats such that individuals may exhibit all or a select few of the described signs. Initial signs may be vague and consist of pacing, agitation, and licking at the tail or back legs. Later, hissing, growling, and biting at their tail or sides and exaggerated tail wagging may follow. Some cats will bite and scratch at their front legs or paws. They may vocalize, suddenly run and hide, and defecate while running. The hallmark sign of this condition is rippling or twitching of the thoracolumbar skin and spasm of the epaxial muscles. The cat may appear agitated during the episode, pupils may dilate, and there may be episodes of self-directed aggression or redirected aggression. The behavior is often difficult or impossible to interrupt and can be induced simply by rubbing the cat's back, although episodes most commonly begin without any apparent environmental stimulation. Some cats exhibit skin rolling and vacuum licking when the dorsal lumbar area is touched.

The first step is to rule out medical conditions. Dermatologic conditions such as parasites (e.g., fleas, cheyletiellosis, *Demodex gato*), yeast infections, allergies, adverse food reactions, and immune-mediated disease can cause pain and irritation in the area. Neurologic diseases such as neuritis, cranial disease, partial seizures, spinal diseases including

myelitis, disk protrusion and trauma, and neuropathic pain can induce clinical signs.⁶¹ Musculoskeletal diseases, including a myelopathy induced by feline leukemia virus and a vacuolar myopathy similar to inclusion-body myositis in humans, have also been identified in some cats.^{62,63} Pain might also arise from the gastrointestinal tract or anal sacs. It has also been suggested that in some cats pain pathways may be overly sensitive to relatively innocuous touch



Figure 11.2 Tyson – a 7-year-old neutered male with adverse food reactions and atopy.

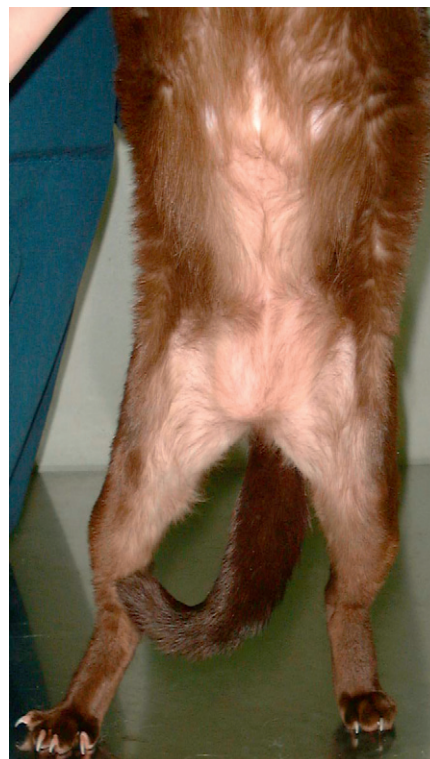


Figure 11.3 Psychogenic alopecia in a 4-year-old Burmese cat Sassy.

sensations.⁶⁴ Any form of arousal could potentially induce hyperesthesia, as can conflict, frustration, and compulsive disorders.

Assuming dermatologic conditions have been ruled out (see **psychogenic alopecia**, above), therapeutic response trials might include drugs for compulsive disorders such as fluoxetine or clomipramine, drugs such as gabapentin which might reduce anxiety but also have an effect on seizures and neuropathic pain, or drugs for pain management such as meloxicam or tramadol. Other anticonvulsant medications such as phenobarbital and clonazepam (which also might act as a muscle relaxant and anxiolytic) might also be considered.

Management and treatment

Treatment will vary with cause. If arousal, conflict, frustration, or anxiety contributes to the problem, the environment should be modified to avoid triggers that might incite the behavior and the cat provided with a predictable environment that provides for all of its behavioral needs. Increased enrichment by increasing predatory chase sessions, providing feeding toys, and increasing exploration with boxes or three-dimensional space and perching areas might be beneficial, provided they do not increase the cat's arousal to a level that might incite the behavior. This program should be

complemented with medications that address the underlying cause, such as clomipramine or fluoxetine in the case of compulsive disorders. Pets that vocalize, chew, lick or bite themselves, or respond with signs of hyperesthesia when stroked or petted, should be evaluated for a pain component which might require the adjunctive use of medications for pain, neuropathic pain, or inflammation in conjunction with behavioral medications such as clomipramine or fluoxetine or perhaps clonazepam or lorazepam, which might reduce anxiety as well as offer muscle relaxant or even seizure control effects. If the underlying problem is epilepsy, then treatment with an anticonvulsant will be necessary.

Canine hyperesthesia

Hyperesthesia, with twitching of the skin and epaxial muscles, which might be associated with circling or self-trauma such as licking or biting, is also recognized in the canine. Possible causes might include arousal and conflict, cranial and spinal diseases, including intervertebral disk disease, dermatologic conditions, neuropathic pain, or as a component of anxiety, arousal or compulsive disorders, especially when accompanied by other signs such as tail chasing in German shepherd dogs.

References

- Overall KL, Dunham AE. Clinical features and outcome in dogs and cats with obsessive-compulsive disorder; 126 cases (1989–2000). *J Am Vet Med Assoc* 2002;221:1445–52.
- Hewson CJ, Luescher UA. Compulsive disorders in dogs. In: Voith VL, Borchelt PL, editors. *Readings in companion animal behavior*. Trenton, NJ: Veterinary Learning Systems; 1996. p. 153–8.
- Latham NR, Mason GJ. Maternal deprivation and the development of stereotypic behaviour. *Appl Anim Behav Sci* 2008;110:84–108.
- Mason GJ. Stereotypic behaviour in captive animals; fundamentals, and implications for welfare and beyond. In: Mason GJ, editor. *Stereotypic animal behavior: fundamentals and application to welfare*. Wallingford: CAB International; 2006. p. 325–56.
- Kaulfuss P, Wuerbel H, Failing K. Studies on classifying abnormal-repetitive behaviours in dogs. *Proceedings of the 2010 European Veterinary Behavior Meeting, Hamburg, 2010*, 92–96.
- Luescher AU. Repetitive and compulsive behavior in dogs. In: Horwitz DE, Mills DS, editors. *BSAVA manual of canine and feline behavioral medicine*, 2nd ed. Gloucester, UK; BSAVA Publications; 2009. p. 236–44.
- Moon-Fanelli AA, Dodman NH, Cottam N. Blanket and flank sucking in Doberman Pinschers. *J Am Vet Med Assoc* 2007;231:907–12.
- Vanderbroek I, Odberg FO, Caemaert J. Microdialysis study of the caudate nucleus of stereotyping and non-stereotyping bank voles. In: *Proceedings of the International Society of Applied Ethology*, Potters Bar: Universities Federation for Animal Welfare. 1995; 245.
- Math SB, Janardhan Reddy YC. Issues in the pharmacological treatment of obsessive-compulsive disorder. *Int J Clin Pract* 2008;61:1170–80.
- Goldberger E, Rapaport JL. Canine acral lick dermatitis: response to the antiobsessional drug clomipramine. *J Am Anim Hosp Assoc* 1990;27:179–82.
- Rapaport JL, Ryland DH, Kriete M. Drug treatment of canine acral lick; an animal model of obsessive-compulsive disorder. *Arch Gen Psychiatry* 1992;49:517–21.
- Stein DJ, Mendelsohn I, Potocnik F, Van Kradenberg J, Wessels C. Use of the selective serotonin reuptake inhibitor citalopram in a possible animal analogue of obsessive-compulsive disorder. *Depress Anxiety* 1998;8:39–42.
- Wynchank D, Berk M. Fluoxetine treatment of acral lick dermatitis in dogs: a placebo-controlled randomized double blind trial. *Depress Anxiety* 1998;8:21–3.
- Moon-Fanelli AA, Dodman NH. Description and development of compulsive tail chasing in terriers and response to clomipramine treatment. *J Am Vet Med Assoc* 1998;212:1252–7.
- Irimajiri M, Luescher AU, Douglass G et al. Randomized, controlled clinical trial of the efficacy of fluoxetine for treatment of compulsive disorders in dogs. *J Am Vet Med Assoc* 2009;235:707–9.
- Hewson CJ, Luescher UA, Parent JM, et al. Efficacy of clomipramine in the treatment of canine compulsive disorder. *J Am Vet Med Assoc* 1998;213:1760–5.
- Pereira JT, Larsson CE, Ramos D. Environmental, individual, and triggering aspects of dogs presenting with acral lick dermatitis. Abstract. In: Heath S, editor. *Proceedings of the 7th International Meeting of Veterinary Behaviour Medicine*, ESVC Belgium, 2009, 278–9.
- Dodman NH, Karlsson EK, Moon-Fanelli A, et al. A canine chromosomes 7 locus confers compulsive disorders susceptibility. *Mol Psychiatry* 2009;15:8–10.
- Bradshaw JWS, Neville PF, Sawyer D. Factors affecting pica in the domestic cat. *Appl Anim Behav Sci* 1997;52:373–9.
- Moon-Fanelli AA, Dodman NH, Famula TR. Characteristics of compulsive tail chasing and associated risk factors in Bull Terriers. *J Am Vet Med Assoc* 2011;238, 883–9.
- Blackshaw JK. Tail chasing and circling in dogs. *Can Pract* 1994;19:7–11.
- Yalcin E. Comparison of clomipramine and fluoxetine treatment of dogs with tail chasing. *Tierarzt Prax* 2010;28:295–9.
- Schumaker AK, Angus JC, Coyner KS et al. Microbiological and histopathological features of canine acral lick dermatitis. *Vet Dermatol* 2008;19:288–98.
- Cabib S. Neurobiological basis of stereotypies. In: Lawrence AB, Rushen J, editors. *Stereotypic animal behavior; fundamentals and applications to welfare*.

- Wallingford: CAB International; 1993. p. 119–45.
25. Korff S, Harvey BH. Animal models of obsessive-compulsive disorder: rationale to understanding psychobiology and pharmacology. *Psychiatr Clin North Am* 2006;29:371–90.
 26. Hartgraves SL, Randall PK. Dopamine agonist-induced stereotypic grooming and self-mutilation following striatal dopamine depletion. *Psychopharm* 1986;90:358–63.
 27. Kennes D, Odberg FO, Bouquet Y et al. Changes in naloxone and haloperidol effects during the development of captivity induced jumping stereotypy in bank voles. *J Pharmacol* 1988;153: 19–24.
 28. Iglaue F, Rasim R. Treatment of psychogenic feather picking in birds with a dopamine antagonist. *J Small Anim Pract* 1993;34:564–6.
 29. Pageat P, Lafont C, Falewee C, et al. An evaluation of serum prolactin in anxious dogs and response to treatment with selegiline or fluoxetine. *Appl Anim Behav Sci* 2007;105:342–50.
 30. Dodman NH, Shuster L, White SD et al. Use of narcotic antagonists to modify stereotypic self-licking, self chewing and scratching behavior. *J Am Vet Med Assoc*, 1988;193:815–9.
 31. Brown SA, Crowell-Davis S, Malcolm T, et al. Naloxone-responsive compulsive tail chasing in a dog. *J Am Vet Med Assoc* 1987;190:884–6.
 32. Brignac MM. Hydrocodone treatment of acral lick dermatitis. In: *Proceedings of the 2nd annual world congress of veterinary dermatology*, Montreal; 1992, 50.
 33. Schneider B, Dodman NH, Maranda L. Use of memantine in treatment of canine compulsive disorders. *J Vet Behav* 2009;4:118–26.
 34. Dodman NH, Shuster L, Nesbitt G, et al. The use of dextromethorphan to treat repetitive self-directed, scratching, biting or chewing in dogs with allergic dermatitis. *J Vet Pharmacol Ther* 2004;27:99–104.
 35. Schoenecker B, Heller KE. Stimulation of serotonin (5-HT) activity reduces spontaneous stereotypies in female but not in male bank voles (*Clethrionomys glareolus*). Stereotyping female voles as a new animal model for human anxiety and mood disorders? *Appl Anim Behav Sci* 2003;80:161–70.
 36. Dehasse J. Clinical management of stereotypies in dogs. Presented to the AVSAB annual conference, AVMA 1998.
 37. Dodman NH, Knowles KE, Shuster L, et al. Behavioral changes associated with suspected complex partial seizures in bull terriers. *J Am Vet Med Assoc* 1996;208:688–91.
 38. Blackshaw JK, Sutton RH, Boyhan MA. Tail chasing or circling behavior in dogs. *Canine Pract* 1994;19:7–10.
 39. Rapoport JL, Ryland DH, Kriete M: Drug treatment of canine acral lick, an animal model of obsessive-compulsive disorder. *Arch Gen Psychiatry*, 1992;49:517–21.
 40. Seksel K, Lindeman MJ. Use of clomipramine in the treatment of anxiety-related and obsessive-compulsive disorders in cats. *Aust Vet J* 1998;76:317–21.
 41. Irimijami M, Luescher UA. Effect of fluoxetine hydrochloride in treating canine compulsive disorder. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. 200, p. 198–200.
 42. Sawyer LS, Moon-Fanelli AA, Dodman NH. Psychogenic alopecia in cats: 11 cases (1993–1996). *J Am Vet Med Assoc*, 1999;214:71–4.
 43. Gilron I, Bailey JM, Tu D. Nortriptyline and gabapentin, alone or in combination for neuropathic pain: a double-blind randomized controlled crossover trial. *Lancet* 2009;374:252–62.
 44. Wald R, Dodman N, Shuster L. The combined effects of memantine and fluoxetine on an animal model of obsessive-compulsive disorder. *Exp Clin Psychopharmacol* 2009;17:191–7.
 45. Kukanich B, Papich MG. Plasma profile and pharmacokinetics of dextromethorphan after intravenous and oral administration in dogs. *J Vet Pharmacol Ther* 2004;27:337–41.
 46. White SD. Naltrexone for treatment of acral lick dermatitis in dogs. *J Am Vet Med Assoc* 1990;196:1073–6.
 47. Beaver BV. *Canine behavior insights and answers*. 2nd ed. St. Louis: Saunders Elsevier; 2009. p. 83.
 48. Dehasse J. Retrospective study on the use of Selgian (selegiline) in cats. In: *Proceedings of the American Veterinary Society of Animal Behavior* 1999.
 49. Willemse T, Spruijt BM. Preliminary evidence for dopaminergic involvement in stress-induced excessive grooming in cats. *Neurosci Res Commun* 1995;17:203–8.
 50. Dodman NH, Bronson R, Gliatto J. Tail chasing in a bull terrier. *J Am Vet Med Assoc* 1993;202:758–60.
 51. Rusbridge C. Neurological diseases of the Cavalier King Charles spaniel. *J Small Anim Pract* 2005;46:265–72.
 52. Rusbridge C. Chiari-like malformation and syringomyelia in Cavalier King Charles Spaniels. Doctoral Thesis. Utrecht University 2007.
 53. Dewey CW, Cerda-Gonzalez S, Levine JM. Pregabalin as an adjunct to phenobarbital, potassium bromide, or a combination of phenobarbital and potassium bromide for treatment of dogs with suspected idiopathic epilepsy. *J Am Vet Med Assoc* 2009;235:1442–49.
 54. Becuwe V, Blanger MC, Frank D et al. Gastrointestinal disease in dogs with excessive licking of surfaces. *ACVIM Forum* 2009.
 55. Feldman EC. Diagnosis and treatment of pd/pu. *Proceedings of the Western Veterinary Conference* 2005.
 56. Denerolle P, White SD, Taylor TS, et al. Organic diseases mimicking acral lick dermatitis in six dogs. *J Am Anim Hosp Assoc* 2007;243:215–20.
 57. Houpt KA. *Domestic animal behavior*, 4th edition. Ames IA: Blackwell Publishing; 2005.
 58. Waisglass SE, Landsberg GM, Yager JA, et al. Underlying medical conditions in cats with presumptive psychogenic alopecia. *J Am Vet Med Assoc* 2006;228:1705–9.
 59. Rusbridge C, Heath S, Gunn-Moore DA, et al. Feline orofacial pain syndrome (FOPS): a retrospective study of 113 cases. *J Feline Med Surg* 2010;12:498–508.
 60. Shell LG. Feline hyperesthesia syndrome. *Feline Pract* 1994;6:10.
 61. Croates JR, Dewey CW. Cervical spinal hyperesthesia as a clinical sign of cranial disease. *Compend Contin Educ Pract Vet* 1998;20:1025–27.
 62. March P, Fischer JR, Potthoff A, et al. Electromyographic and histological abnormalities in epaxial muscles of cats with feline hyperesthesia syndrome. *J Vet Int Med* 1999;13:238.
 63. Carmichael KP, Bienzle D, McDonnell JJ. Feline leukemia virus-associated myelopathy in cats. *Vet Pathol* 2002;39:536–45.
 64. Drew LJ, MacDermott AB. Neuroscience: unbearable lightness of touch. *Nature* 2009;462:580–1.

Recommended reading

Kuehn N. North American companion animal formulary. 9th ed. Port Huron Michigan: North American Compendiums; 2010.

Mason G, Rushen J, editors. Stereotypic animal behavior fundamentals and applications to welfare. 2nd ed. Oxfordshire, UK: CAB International; 2006.

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Fears, phobias, and anxiety disorders

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Introduction

Take a look at the wide array of behavior problems that are problematic for pets and their families and you will notice that fear and anxiety play major roles or contribute in some way to a majority of canine and feline behavior disorders (see definitions of anxiety, fear, and phobia in [Box 12.1](#)). Storm phobias, noise phobias, social avoidance, fear-related aggression, compulsive disorders, and submissive urination have obvious anxiety components, but even problems such as urine marking, territorial aggression, and resource guarding can be fueled by fear or anxiety. Understanding the behavioral and physiologic aspects of anxiety and the fear response, as well as how to choose and coach the owner patiently through conditioning exercises become important

aspects of working with a wide variety of behavior problems.

The fear response

When an animal experiences anxiety, fear, or stress, both the sympathetic system and hypothalamic–pituitary–adrenal (HPA) axis are stimulated so that the body can respond to the threat.¹ The sympathetic system releases norepinephrine (noradrenaline) and epinephrine (adrenaline) from the sub-cortical areas of the brain and adrenal gland, leading to the behavioral responses of fight, flight, or freeze. The physiologic response is an almost instantaneous immediate increase in heart rate, blood pressure, respiratory rate, and vasoconstriction to internal organs. Epinephrine also stimulates

Box 12.1 Definitions related to anxiety, fear, and phobia**Anxiety**

A reaction of apprehension or uneasiness to an anticipated danger or threat. Signs are physiologic (autonomic arousal, increased heart and respiratory rate, trembling, salivation, gastrointestinal, and hypervigilance) and behavioral (freezing, lip licking, yawning, pacing, stress vocalizations, restlessness). Anxiety may be displayed in the absence of an identifiable stimulus. It may become generalized in some pets or may be specific to situations of perceived threat.

Fear

An emotional response due to the presence or proximity of a specific stimulus (e.g., object, noise, individual, social situation) that the pet perceives as a threat or danger. It is a psychological and physiological state characterized by somatic, emotional, cognitive, and behavioral components. It can be a normal adaptive response. The appropriateness of the fear response is determined by its magnitude and the context in which it occurs. The presence of an identifiable fear-eliciting stimulus differentiates it from anxiety.

Phobia

A profound, excessive, abnormal fear response that occurs without the presence of a true threat or is out of proportion to the needs for dealing with an actual threat. While fears may be adaptive responses, phobias are maladaptive and interfere with normal function. With repeated exposure the extreme fear persists or intensifies. Panic attacks, hysteria, and catatonia can be components of phobic responses.

breakdown of glycogen and fat (lipolysis) and increases glucose production (gluconeogenesis) to provide immediate energy to fuel fight or flight. Stimulation of the HPA axis provides cortisol release which aids in the immediate response; however, chronic stimulation may lead to the medical and behavioral consequences associated with chronic stress (see [Chapter 6](#)). Studies have shown that psychological factors may stimulate the HPA axis more than physical factors; therefore, addressing mental well-being is essential to both health and welfare.^{2,3}

The amygdala is an almond-shaped structure located deep within the temporal cortex; it is considered part of the limbic system. The amygdala is considered to be the primary site responsible for processing external and internal triggers that are fear-evoking or potentially threatening to the animal (i.e., visual, auditory, odor, hypoxia, pain). Inputs run from the sensory organs through the thalamus.⁴ When an animal perceives the stimulus, the amygdala triggers an immediate physiologic fear or startle response, priming the body for immediate action. A second slower pathway travels through the cortex to analyze the signal to determine if the threat is real but once the emotional stage is triggered it may be difficult to inhibit. The amygdala signals the cells of the paraventricular nuclei of the hypothalamus to release corticotropin-releasing factor, thus stimulating the hypothalamic–pituitary axis and the release of norepinephrine from the locus ceruleus.⁵ The amygdala is also the central site for fear conditioning; it integrates prior learning and memory to stimulate other brain centers to initiate the autonomic threat response.⁶ In humans, fear conditioning is thought to play a role in the development

of anxiety disorders such as posttraumatic stress disorder, phobias, and panic disorder.

The locus ceruleus is a brainstem nucleus located in the gray matter of the pons.⁷ The locus ceruleus contains the highest concentration of norepinephrine neurons in the brain and sends projections to many brain regions, including the cortex, hypothalamus, hippocampus, and the median and dorsal raphe nuclei.⁸ Stimulation of the locus ceruleus triggers the release of norepinephrine. Inputs to the locus ceruleus arrive via sensory and visceral stimuli and from afferent projections from the central nucleus of the amygdala. Corticotropin-releasing factor resulting from amygdalar stimulation has an excitatory effect on the locus ceruleus.⁹ Dysregulation of the locus ceruleus may be associated with a variety of psychiatric disorders, including panic attacks, attention deficit hyperactivity disorder, sleep and arousal disorders, and affective disorders.

The hippocampus is another major nucleus of the limbic system and is involved in memory storage.¹⁰ It has anatomical connections with the amygdala and hypothalamus. It is also considered to be responsible for processing contextual information, and differentiating between safe and dangerous; dysfunction may lead to an anxiety response to benign stimulation with an overestimation of potentially threatening context, as in posttraumatic stress disorder in humans.¹¹ The hippocampus can normally suppress the HPA axis. However, chronic stress and cortisol can damage the hippocampus which can then no longer regulate the HPA axis, resulting in excessively high levels of cortisol.⁵ A reduction in hippocampal volume has been identified in posttraumatic stress disorders and in animals exposed to chronic stress.¹² The individual is thought to be less able to draw on memory to evaluate the nature of the stressor when hippocampal function is compromised.

The dorsal and medial raphe nuclei are two functional neuron clusters located in the centromedial portion of the brainstem and considered part of the reticular formation.¹³ Together these nuclei provide virtually all serotonin input to the forebrain.¹⁴ It is hypothesized that the limbic projections of the medial raphe nucleus help modulate fear and anxiety, including autonomic responses, while the dorsal raphe nucleus modulates cognitive and motor components that inhibit flight or fight responses.¹⁴

The forebrain is also involved in the fear response in that it has some influence in modulating the limbic system and hypothalamus, and a functioning forebrain is necessary to unlearn fear responses.

Dysregulation of fear pathways appears to be important in manifestation of the clinical signs associated with phobias and anxiety disorders. This dysregulation involves alterations in the activity of a number of neurotransmitters, including serotonin, norepinephrine, and gamma-aminobutyric acid (GABA). Of these neurotransmitters, serotonin and GABA are inhibitory and typically quiet the stress response.

Excessive fear responses may be due to genetic factors, inadequate early environmental experiences, inadequate early socialization, a conditioned fear due to one or more unpleasant experiences, medical or behavioral pathology, or a combination of these factors ([Box 12.2](#)). Many fearful behaviors can be linked to experiences in the first year of development. Handling, nutritional and maternal care during the first few weeks of life in the breeder's

Box 12.2 The nature of fear¹**Determinants of fear**

- | | |
|---------------|--|
| Genetics | <ul style="list-style-type: none"> • Species: unconditioned stimuli for fear such as predators, environmental danger, novel situations, and social threats • Individual: temperament |
| Environmental | <ul style="list-style-type: none"> • Inadequate socialization, habituation • Sensory isolation/nutritional deprivation/illness during development • Traumatic/aversive experiences (conditioning) • Consequences/learning (negative reinforcement by stimulus retreat) |

Components of fear

- | | |
|------------|--|
| Physiology | <ul style="list-style-type: none"> • Activation of autonomic and neuroendocrine systems with influence on the cardiovascular system, pupils, piloerection, and glucose metabolism |
| Behavior | <ul style="list-style-type: none"> • The type of fearful behavior that is exhibited is determined by genetics (species, breed, individual), experience, environment, type and intensity of stimulus, and presence/absence of conspecifics, family • The function of fear-related behavior is to remove the stimulus (threats) or remove the animal from the fearful situation (escape) |
| Emotion | <ul style="list-style-type: none"> • Observation of the emotional state of stimulus, family members or other dogs |

¹Gazzano A, Mariti C, Papi F, et al. (2009) Are domestic dogs able to calm conspecifics by using visual communication? In: Proceedings of the Seventh International Veterinary Behavior Meeting, Edinburgh, Belgium: ESVCE, pp. 77–78.

environment, as well as exposure during the socialization period with its own and other species and to its environment can set the pet up for success or can contribute to fearful behaviors that might be difficult, if not impossible, to resolve. However, even with adequate exposure, fear may arise unless exposure to social and environmental experiences is maintained.¹⁵ There may be a second phase of heightened sensitivity arising around sexual maturity.^{16,17} Unpleasant and stressful experiences during early adolescence, including punishment-based training, may also contribute to fear conditioning and increased avoidance.^{18–24} Attendance at puppy classes and use of pheromones may to some degree be preventive.^{25–27}

When dogs and cats are exposed to new stimuli, their response will depend in part on their sociability (genetics, stage of development), previous experience with similar stimuli, and the emotional and medical health of the pet at the time of exposure.² If the outcome is positive then the fear may reduce with further exposure. If the stimulus has no consequence, the pet may ignore the stimulus with further exposure. However, pets that have an unpleasant experience, or perceive that the stimulus might be harmful, will avoid or become increasingly fearful of the stimulus. Increasing the frequency of exposure to fear-evoking stimuli has been shown to increase the risk of inducing further fear and phobias.²⁸ An intensely unpleasant or aversive event can lead to an intensely fearful and lasting memory of the stimulus (one-event learning). Although the pet may only become fearful of specific stimuli (discrimination) such as a noise (e.g., gunfire), place (e.g., veterinary clinic), or person (e.g., neighbor's child), some pets may generalize to many similar stimuli (e.g., all children). In addition, the pet may become fearful of events that precede the unpleasant situation (e.g., the car ride that precedes the veterinary visit). High states of arousal or anxiety place the dog in a state of hypervigilance, where fear responses are automatic, and preclude the possibility of conscious decisions as to how to respond (**Box 12.3**). Therefore, only if the pet's level of arousal is sufficiently reduced can it review options and make conscious decisions as to whether a stimulus is positive, aversive, or of no consequence. Arousal can be reduced by ensuring that

Box 12.3 Signs of anxiety

- Hypervigilance, scanning
- Increased motor activity (restlessness, pacing, circling)
- Vocalization/whining
- Displacement behaviors – out-of-context grooming and scratching, yawning, lip licking, whining and barking, destructive, digging
- Changes in social soliciting behavior – increase or decrease in attention seeking
- Hiding, escape attempts
- Physiologic signs (trembling, dilated pupils, hypersalivation, ↑ respiratory rate, ↑ heart rate, urination, defecation, vomiting)
- Decreased appetite.

For signs of fear and anxiety see [chapter 2](#) and [Appendix B: Communication – Fear and Body Language Resources](#).

the pet is calm through training by using products for control such as head halters, by selecting an appropriate environment for exposure, and through selection and control of appropriate stimuli for retraining. Drug therapy may also be useful.

Regardless of the cause, each fear-eliciting event that does not end with a positive outcome is likely to aggravate the problem further.²⁸ Since the goal of counterconditioning is to change the association with the stimulus to one that is positive, any response from the owner or the stimulus that might lead to a negative or unpleasant consequence will further increase the fear and anxiety. Therefore punishment and other aversive correction techniques must be entirely avoided, and the stimuli should be muted, minimized, or avoided until controlled and successful exposure training can be implemented. In addition, if the owner displays any emotions of anger or anxiety, this is likely to increase the pet's anxiety. Also, if the pet escapes from the situation or aggression results in retreat of the stimulus, then the behavior has been negatively reinforced because the threatening stimulus has been removed. In treating a fear-related problem, it is often just as important to tell the family what not to do, as it is to tell them what to do.

Table 12.1 Behavioral modification techniques used for fearful behaviors

Step	Comments
Identify signs of fear and all fear-eliciting stimuli	- All stimuli that might evoke a fear response must be identified to determine initial avoidance (prevention) strategies, and the focus for desensitization and counterconditioning - Describe signs of fear to insure owners can identify onset (see chapter 2 and Appendix B – Communication – Facial and Body Language Resources)
Identify the threshold for the fear response	The amount, intensity, or proximity of the fear-evoking stimulus that is required to elicit signs of fear should be established in order to set a subthreshold starting point for behavioral modification
Control exposure	Prevent exposure to fear-evoking stimuli that occur outside training sessions
Control the pet's response (safety, training and avoidance strategies)	The pet should first be trained to be calm and focus prior to exposure (see Box 7.2, client handout #23, available online, for training dogs to settle). Indoor stimuli that might cause fear can be avoided by confining the pet away from stimuli or keeping the pet on a leash to prevent access to the stimuli. Similarly, if the pet is taken outdoors it should be walked at times or in locations where it can be kept away from stimuli or controlled with leash and head halter to be able to remove it from the situation quickly
Modify the behavior	- For dogs, it is helpful to use highly motivating rewards such as food, social attention, or a favorite toy to reward "sit-stay" or "look / watch" or other settle commands prior to exposure. Then, the command can be used to settle and calm the pet when low-level exposure to the fear-evoking stimulus is begun. Cats can be rewarded with food, social attention, or play toys during exposure depending on what is most motivating - When the pet responds immediately and positively to commands, begin desensitization by setting up exposure to a stimulus intensity that is below the threshold that would evoke fear. Rewards should be associated with each exposure to the stimulus provided the pet shows no fear - Gradually increase the intensity of the stimulus or decrease the proximity - A head halter, verbal cue to focus, or a favored squeak toy may be an effective way to get the pet's attention and settle it down so that the reward can be given and the positive association accomplished
Maintain calm	In order to achieve a positive association with the stimulus the owner must consistently remain calm. Anxiety or agitation on the owner's part will further increase the pet's anxiety
Avoid punishing or reinforcing fearful displays	- From a behavioral perspective, if the fear-evoking stimulus retreats or the pet is removed from the situation before it is calm, the behavior might be negatively reinforced. However, when dealing with fear, the pet's emotional state is overriding and the focus should be on achieving a calm and positive emotional state and ensuring safety even if it means distracting the pet with a favored reward or removing the pet from the situation - Similarly, while punishment might reduce undesirable behavior, fear is an emotional state and punishment (or any anger, frustration, fear, or threat from the owner or stimulus) will aggravate the fearful state

Basic behavioral modification and the fearful pet

All management approaches for treating fear are based on two important principles: (1) avoidance of any stimuli or situations that evoke a fear response; and (2) controlled exposure to stimuli in such a way that the pet becomes relaxed in their presence and they no longer elicit a fear response.

Techniques for managing fears and phobias include controlled exposure, habituation, systematic desensitization, counterconditioning, shaping, response substitution, and positive reinforcement^{29–33} (see [Chapter 7](#)). They can be used individually or together in behavioral modification therapy ([Table 12.1](#)). If a situation arises during training or counterconditioning that might trigger an aggressive response, safety is the overriding concern. The use of confinement, tie-down, muzzle, and the physical control provided by a leash and head halter (dogs) or leash and harness (cats) can prevent aggression and retreat.

Desensitization, counterconditioning, and controlled exposure

Before exposure exercises, the pet should be taught calm and reliable responses such as sit-stay or down-stay using

high-value rewards. The owner should also consistently require that the pet display these behaviors before any attention is given. By being predictable in all interactions, the pet's anxiety is reduced by giving it control over social interactions, while at the same time learning the behaviors the owners want to train and reward. Over time, the owner can gradually shape longer and more relaxed behaviors prior to each reward, further calming the pet and training the desired behaviors (see client handout #13 on structured interactive training, C.14). Similarly, whenever the owner has a reward of high value, the focus should be on training behaviors that calm and relax the pet, with the further intent of using these during stimulus exposure. Training should focus on specific behaviors that might be most practical for stimulus exposure such as relaxed loose-leash walks or sit and focus for outdoor stimuli and sit and focus, down and stay, or mat exercises for indoor stimulus exposure.

For desensitization and counterconditioning, a highly valued reward should be paired with each exposure to the fear-evoking stimulus. If the pet is also taught to respond reliably and consistently to cues to settle and calm, these can be used to keep the pet's focus. The stronger the reward, the more likely the pet will maintain focus and make positive associations during low-level stimulus exposure. The pet should then be gradually exposed to progressively stronger levels of stimuli while making a positive association with

each exposure to the stimulus. Should the threshold for fear be surpassed at any point in the desensitization program, the owner should return to an earlier level of training and proceed in smaller increments. By withholding rewards except for each pairing with the stimulus, a new positive association with the stimulus should be conditioned.

If the fear is mild and the owner has good control over the pet, stimulus, and situation, controlled flooding techniques (continuous exposure to stimuli at levels that are minimally above the threshold that elicits fear) may be successful as long as the pet will quickly habituate to the stimulus so that a reward can be given. Ideally, this would be a valued positive reinforcer. However, removing the pet from the situation

or removing the stimulus before the pet begins to calm may negatively reinforce the behavior. If the stimulus is too intense for the pet to calm quickly, the stimulus intensity should be reduced (by increasing the distance between the pet and the stimulus) to minimize the fear to a level at which the pet can habituate. A leash and head halter can be helpful in providing increased control and ensuring compliance. Once all signs of fear subside and the pet responds to the owner's commands, rewards (food, play, social attention) should be given. The strength of the stimulus can gradually be increased during each succeeding training session as long as the endpoint of each exposure is positive (Box 12.4).

Box 12.4 Behavior modification for dogs with fear and phobias toward noises and locations (client handout #8, printable version available online)

There are many different stimuli that can frighten your dog. This handout is designed to develop a program for improving or resolving fear of inanimate stimuli such as places, noises, or objects. When the fear is severe, it may be too intense for your dog's well-being and impractical for you to improve without combining a drug or natural supplement with the behavior program. Once a pet becomes fearful of something, that fear can be generalized so that it occurs in response to a variety of other noises, locations, or unusual situations. In addition, each exposure to the fear-eliciting stimulus with a negative outcome further increases the fear. Therefore avoidance is essential until improvement can be made.

Treatment of fear

In simple terms, the pet must be exposed to the fear-evoking stimulus at a great enough distance or reduced volume that it is not fearful. If the association with the stimulus can be turned into one that is positive, the pet may develop a positive attitude to the stimulus.

Desensitization is used in combination with counterconditioning to change a pet's attitude or "feeling" about the stimulus from one that is negative to one that is positive. Desensitization involves controlled exposure to situations or stimuli that are weaker or milder than will cause fear. Counterconditioning is then used to change the dog's response to the stimulus by associating something the dog likes with each exposure to the stimulus. The dog is then gradually introduced to similar but progressively more intense stimuli paired together with the presentation of something the dog really likes. If an inappropriate response (fear, escape attempts, aggression) is exhibited then an attempt should be made to distract and calm the dog, or remove the dog to a distance or location where it can be successfully calmed.

Response substitution involves training the dog to behave in a calm and relaxed manner (sit, settle, go to a mat, walk on loose leash) and then engaging it in a behavior that is incompatible with the fear response for rewards when exposed to the fear-eliciting stimulus. Response substitution is likely to be effective if the dog is consistently responsive to the training and the exposure to the fear is at a low enough level that the dog can be successfully cued to respond to the command. A head halter and leash can be used to ensure success and high-valued rewards (clicker training may be helpful) used to mark and reinforce an acceptable relaxed response.

Any exposure to the fear-eliciting stimulus before you are able to calm your dog will worsen the fear and anxiety. Be certain stimuli are well controlled, and mild enough so that your pet is less likely to be reactive. Do not plan any exposures unless you are confident you can achieve a positive endpoint. Since a dog's response is also influenced by your emotional state and the behavior of the people or other animals to whom your dog is being exposed, any threats, agitated behavior, or punishment will further aggravate the problem.

Steps for treating a pet that is fearful of inanimate objects and sounds

1. Know the signs of fear: Identify all stimuli and situations that cause the pet to be fearful. Remember that multiple stimuli may add to the fearful response so that each stimulus should be identified separately. For example, a pet that is fearful of a vacuum cleaner might be afraid of the sound, sight, or motion of the vacuum cleaner. Pets fearful of thunder may also react to the rain, lightning, darkness, barometric pressure or electric charges.
2. Prevent your dog from experiencing the stimuli except during counterconditioning. This may be difficult for certain phobias such as thunderstorms so that medication or other products might be needed to help calm your pet or reduce exposure to the stimuli. Confinement to an area where sounds or sight of the stimuli can be avoided, using music or white noise to mask external sounds, calming caps or goggles that reduce visual stimuli, ear bands or muffs that reduce audible stimuli or calming shirts or wraps, might aid in reducing the level to one that is tolerable for the dog.
3. Train the dog to relax or settle on command, in the absence of any fear-evoking stimuli (see Box 7.2, client handout #23, for training dogs to settle, and client handout #13 on structured interactive training, C.14, available online). Begin in an environment where the dog is calm, focused, and has minimal distractions. Gradually proceed to progressively more distracting locations and situations. The initial conditioning should be done by family members with whom the pet is calmest, most controlled, and responsive. For some dogs, using a head halter improves the speed and safety of training. Implementing a program of predictable interactions where all affection and social rewards are only given for calm and focused behaviors helps to reduce anxiety both by giving the pet control over its rewards and by ensuring that only calm behaviors get rewarded. Practice the training in a variety of environments using treats or toys as rewards. Consider clicker training to be able to immediately reward and gradually shape more relaxed responses when at a distance from your pet.
4. For storm and firework phobias, it can be particularly useful to train the pet to settle or go to a location where it feels comfortable and secure, and where the auditory and visual stimuli can be minimized, such as a crate with a blanket or cardboard appliance box as cover. In addition, positive cues can be implemented that further calm and distract the dog. This can be accomplished by pairing a CD, video, white noise, or even a towel or blanket that has the owner's scent with each positive settle training session. Encourage the dog to enter voluntarily by placing its favored chews and food-filled toys in the area.
5. Each stimulus that leads to fear must be identified and placed along a gradient from mildest to strongest. It will be necessary to

Box 12.4 Behavior modification for dogs with fear and phobias toward noises and locations (client handout #8, printable version available online)—cont'd

- reproduce the stimuli so that they can be muted or minimized and presented in a controlled manner. An audio recording or video might be a good starting point for conditioning to the sound of the stimulus. If a pet is afraid of the sound, sight, and movement of the vacuum cleaner, then these may all need to be controlled and introduced separately.
- Determine the pet's favored rewards and save these for retraining and counterconditioning. For some pets, food is the strongest reward while others may be more responsive to a favored play toy. The reward should be presented each time the pet settles in response to the stimulus. Always train with a quiet, relaxed, upbeat tone of voice.
 - If the pet responds fearfully as you proceed slowly through more intense stimuli, stop the exposure, wait till the pet is fully calm and reward. The stimulus can then be reintroduced at a

slightly lower level, and desensitization and counterconditioning can resume.

- Once each stimulus has been presented along a gradient of increasingly stronger stimuli and the pet acts calmly and takes rewards in the presence of each stimulus, the separate elements can then be combined and gradually introduced as a group (e.g., vacuum turned on and moving).

Considerations

If the stimulus evokes a strong anxiety response at the beginning of the training session, then the stimulus is not sufficiently muted. It may be necessary to redesign the stimulus gradient so that a slower, more cautious approach can be taken. A leash and head halter might also be used to improve success. Clicker training might also be implemented to help precisely time rewards.

Box 12.5 Potential fear-evoking circumstances

Any of the following may evoke a fear response if there is insufficient previous exposure (unfamiliarity):

- Babies, children, elderly
- People in uniform
- People whose appearance differs from that of family members (color, height, facial hair)
- Disabled individuals
- Men or women

Box 12.6 Example of a gradient of stimuli for a dog that is fearful of unfamiliar men**Dog that is afraid of men****Gradient of stimuli**

- Familiar women
- Unfamiliar women
- Familiar boys
- Unfamiliar boys
- Familiar men
- Unfamiliar men

LESS FEARFUL

MOST FEARFUL

Fear of people

Some pets show fear toward a particular person, all unfamiliar people, or a type of person (child, baby, man in uniform – [Box 12.5](#)). Depending on how a pet was socialized when it was young and the experiences it has had with people, it may be fearful of individuals with whom it is unfamiliar or with those it associates with an aversive experience.

Diagnosis and prognosis

The fearful response could include aggression, cowering, shaking, freezing, or escape. Signs of conflict that suggest a pet is becoming uncomfortable in a situation include displacement behaviors such as yawning, lip licking, whining, out-of-context grooming, or circling. Changes in appearance associated with fear include: tail held low or tucked, ears held back, avoidance of eye contact, lowered body position, leaning away, lateral recumbency, and submissive urination. In fearful situations, the animal will attempt to perform behaviors that help it avoid interaction with the person. Innate behavior patterns, learning, conditioning, the stimulus (e.g., adult versus child) and the location determine whether the animal will freeze, flee, or fight.

The prognosis may be good if the duration is short, the pet has a stable temperament, was adequately socialized to people, and the owner can control further interactions to ensure safety and success. It is more practical to achieve positive outcomes in pets that show fear without aggression. The prognosis is poor for pets with a strong genetic component, early age of onset, or that have had grossly inadequate early socialization and in environments where control of fear-eliciting stimuli is difficult. In these cases, prevention

may be the only practical way to insure safety and minimize stress for the pet.

Management and treatment

Successful treatment requires that the family identify all fear-evoking people so they can be reintroduced to the pet under controlled situations while making positive associations. It is important for owners to be aware that any fear, anxiety, or threats from the stimulus, or any anxiety, threats, or punishment by the owner will worsen the problem.

For each type of person, the owner should develop a gradient or hierarchy of intensity from weakest to strongest. Controlling the appearance or presentation of the fear-eliciting person and the distance between the person and the pet are two means of developing this gradient ([Boxes 12.4–12.6](#)). The conditioning should take place in a calm, nonthreatening environment where the pet can easily be controlled. For some pets, it might be helpful to hold the first session on neutral territory such as at the neighborhood park. The goal is to associate the person with something that is highly valued such as a favored treat, toy, or social attention (counterconditioning). The key to success is to determine the threshold for eliciting fear of the stimulus (e.g., the distance where the pet exhibits the slightest fear) and then begin conditioning below the threshold. Eventually, the appearance of the person becomes a cue that something good will happen. A leash and head halter for dogs or a crate for cats might be used for exposure if there is the potential for aggression and to prevent escape.

For fear of people, training should begin with a person with only slightly similar characteristics to the type of person that elicits the fear response. For example, if the pet is afraid of children under 5 years of age, it should first be desensitized to teenagers. The pet can also be desensitized to the sounds of children by exposing it to recordings before beginning conditioning sessions with children. Pets that are afraid of men with beards should first be conditioned to approach from men without beards, or even a member of the family wearing a beard. Carrying a doll wrapped in a blanket and playing a recording of a baby can be a first step in accustoming the pet to babies.

At first, the strangers should ignore the pet while the owner gives treats for relaxed behavior at a safe distance. Initially, eye contact should be avoided. The owner and the pet can slowly approach the person as long as no fear is evoked and the pet is given a tasty treat every few steps. Next, the treats can be tossed by the stranger. Fearful dogs may cower and retreat but some may attack. Therefore the owner should proceed cautiously and slowly to ensure safe and successful retraining. A head halter can provide safe and effective control for dogs while a carrying cage or a body harness and leash can help to ensure control and safety for cats. Perhaps most important is to have reasonable goals. If the pet is intensely fearful or has the potential for aggression, interactions, especially with children or the elderly, may need to be limited (Box 12.7) or entirely avoided.

Before bringing strangers into the home for conditioning exercises, the owner should first plan on providing a safe haven where the pet can go to settle away from strangers until the situation is set up for successful exposure. Using reward training, teach the pet to go to a mat, crate, or room with a gate so that access to visitors can be prevented until the pet and owner are prepared for exposure. Begin by desensitizing the pet to the door bell by having family members ring the bell and enter. The bell should be rung repeatedly in close succession until the pet habituates and all undesirable or fearful responses cease. Each time the bell rings and the pet shows no undesirable response a very tasty food reward should be tossed to it. Next, set up practice visits with people the pet knows and feels comfortable around. Have the pet on a leash at a safe distance away from the door. One family member should focus on greeting the visitor and one should focus on the training. As the visitor enters he should ignore the dog and avoid making eye contact. The dog should be asked to sit and focus (with a head halter if necessary). If the dog sits and calms the owner should immediately reinforce with a favored treat. If necessary, repeat the

process with the visitor leaving and returning until the dog immediately sits and calms (response substitution). Another alternative is for the owner to keep the dog at sufficient distance and give favored treats or toss treats on the floor as long as the dog shows no anxiety. Entries can be repeated while giving treats until a positive association is made (counterconditioning). The owner should then ensure that the dog will sit with each entry before giving the reward. Once indoors, the visitors should continue to ignore the pet, while the owner gradually determines how close the pet can approach, remain calm, and take treats. If the pet appears ready to approach in a friendly, nonfearful manner, the visitor can casually flip small pieces of meat or cheese toward it. Extending a hand with food instead of flipping it is more likely to inhibit approach behavior and should initially be avoided. Determine an end point where the pet feels comfortable. Next, proceed to strangers. If the pet is most afraid of adult men, then the next set of exercises should first involve unfamiliar women followed by exercises with unfamiliar young men, and finally adult men. The owner should save high-value rewards for training sessions, so that the pet learns to really look forward to the presence of visitors or strangers. Each training session should end at a distance (limit) that can be successfully and positively achieved.

Some pets do better if they are confined when company arrives such as in a room, crate, gated area, or tie-down or restrained in another room on a leash by a family member. Upon arrival, the visitor is asked to sit at the far end of the largest room in the home. The owner gives the visitor a bowl containing small pieces of meat and instructs the person to remain quiet, avoid eye contact, and completely ignore the dog when it is brought into the room. When the pet will calm and settle for a reward it can be brought out of its room on a leash, and a head halter if needed. The owner gradually moves the dog toward the visitor, giving food rewards every few feet if the dog remains calm. If the pet does not sit or take the treat the owner should move the pet back a few steps and proceed more slowly. As long as the dog is calm and takes the reward the owner can proceed (as in the paragraph above). Some pets are more motivated by a favored play toy, in which case this can be used to lure and reward the pet for approaching and interacting with the visitor. Finally, the pet can be given a toy stuffed with food to work on while the family and friends visit. In some cases keeping the dog entirely away from visitors is best for the dog, the family and the visitors.

When the dog appears entirely relaxed with the visitors and there is no history or potential for aggression, the question then becomes how much interaction with the stranger the pet would enjoy.

It is important to note that some pets will find interactions with unfamiliar people undesirable or potentially threatening. In fact some dogs will show limits in how much affection they will tolerate even from familiar people and family members. Therefore it is essential for owners to know their dog and read its facial expressions, body language, and posturing to determine how far to proceed with each stranger.

If the dog enjoys physical contact from known individuals and the owner can evaluate the situation and determine that the dog is relaxed and willing to engage in further interaction, the owners should proceed to structured interactions with the visitors (see Appendix C, form C.14, client handout #13, printable version available online). Visitors are told that

Box 12.7 Example of a hierarchy or gradient for desensitization of a dog fearful of men in uniforms

1. Female owner wears uniform while counterconditioning by second family member
2. Female owner in uniform asks the pet to sit and rewards with treat or toy
3. Male owner in uniform
4. Familiar woman in uniform
5. Unfamiliar women in uniform
6. Familiar men in uniform
7. Unfamiliar men with no uniform
8. Unfamiliar men in uniform at gradually decreasing distance

they may not touch the pet unless it first sits and takes a treat. This does several things to help make the situation safe. If, for some reason, the pet shows signs of fear and is too anxious to eat, the interaction should not yet progress to physical interaction. By giving a command that the dog has learned will consistently receive rewards, the dog controls the outcome; therefore if it does not sit and settle, it is indicating that it is not comfortable with taking the reward from the stranger. When the dog does take the treat from the visitor, it is building a positive relationship with the stranger (Boxes 12.8 and 12.9).

As the pet relaxes with visitors, a recall game is an excellent game to play. The pet is simply called between family members and visitors to sit for a highly valued piece of food. This reinforces approach behavior, habituates the pet to hand movements as treats are tossed or given to it, and provides a positive association with visitors. It is a good idea to leave a leash attached to the pet as a dragline to provide quick control if needed (Table 12.2). It is important to note that in some cases it is most practical and in the best

interest of the dog and family to have a safe comfortable location for housing whenever visitors arrive.

Prevention

Fear of people can often be prevented by proper and sufficient socialization (see Chapter 4). The young animal should be exposed to a wide variety of people during its socialization period in the early months of life, taking care that it is not so overwhelmed as to become fearful. Treats, play, and upbeat social interaction will facilitate socialization. Fearful animals should not be bred. The veterinarian should be instrumental in reinforcing these notions for all owners.

In spite of ample opportunities for socialization and in the absence of abuse, some cats and dogs may still exhibit fear and timidity of people. There are likely underlying genetic problems in these animals. Genetic fears may be evident in the first 2–3 months, although some fears do not become evident until later in adolescence (e.g., sexual maturity).

CASE EXAMPLES

Case 1

Chimo, a 2-year-old intact male American Eskimo dog, became panicked (barking, escape attempts) whenever someone on inline skates approached during a walk.

The owner was instructed to focus on training Chimo with a “sit and focus” command and to walk on a loose leash using small tidbits of meat, first in locations where the pet would not be exposed to skates. The meat was only given during training sessions and before each time it was given, the owner said “It’s OK” to condition a happy, food-anticipatory response whenever the words were said. Once able to walk calmly on leash with body control harness (front attachment), and stop and sit on cue, the owner began exposure training. A group of neighbors were invited to help out with the training by skating back and forth (not toward the dog) in a nearby school parking lot which was closed for the weekend. As the dog became fearful when it was within 12 meters of skaters, the owner was instructed to walk between 15 and 20 meters of a skater, say “It’s OK,” ask the pet to “sit–stay” for food, and then walk off in a different direction toward another skater to repeat the exercise. Gradually, the exercises were performed closer to the skaters. Next Chimo was rewarded each time he looked at a skater without displaying fear. If the skater came too close, Chimo was turned with the leash and harness and moved far enough away where he could calm, settle, and take his reward. Finally, skaters were asked to skate by slowly and toss food to Chimo. Within 10 days, Chimo showed no fear of the skaters, approached them voluntarily, and would even sit in anticipation of a food reward.

Case 2

Sanibel, a 1-year-old spayed female Burmese mix, lived with an adult couple. She was presented because of her fear of people. The pet was

rescued from under a car when she was 6 weeks old. She would not come closer than about 2.5 meters to family members and scurried away when approached. She hid under the bed when visitors were in the home. She was very shy when adopted and friends suggested that the family catch her daily, hold her, and attempt to pet her to show her they were friendly. Upon returning home from work, they would chase her, pull her out from under furniture, and attempt to pet her, but she always became frantic and quickly escaped. The family soon stopped the interaction as they noticed that the pet’s avoidance was getting worse.

During the consultation they learned that they had been too assertive in trying to befriend Sanibel. They were told to begin ignoring her, especially avoiding eye contact. Food would be taken up when they were out of the home and available when they were in the home. During quiet times, when the cat was at the periphery of the family room, the owners were instructed to calmly toss small pieces of shrimp to her. Gradually, they flipped the shrimp closer and closer to themselves so the cat would approach. The home environment was kept as calm and quiet as possible. Gradually the pet approached closer and closer to get the shrimp. After 2 weeks, the pet would jump up on the couch to eat shrimp and in another 2 weeks, it would take shrimp from their hands. It took several more months before the cat would allow contact from the couple.

When visitors were in the home, a plate with shrimp pieces was placed in the bedroom with the cat. During subsequent visits and over many months, the plate was very gradually moved from the room to the hall, down the hall, and eventually to the door into the family room, where visitors could toss shrimp to the pet.

Pets and children

New or expectant parents typically have three major concerns:

1. How to prevent pet behavior problems from occurring after the baby arrives
2. How to introduce the baby to the pet
3. How to keep the child safe around the family pets and other animals.

Parents often assume that jealousy is the cause of problem behaviors associated with the arrival of a new child into the home, but this is not the case. Most problems result from the anxiety caused by the alterations in the pet’s environment and the way the family interacts with the pet. Changes in feeding, exercise, and play schedules; changes in what the pet is allowed to do; changes in how the pet gets attention; inconsistencies in the way family members interact with the pet; and the pet’s level of familiarity and socialization with

Box 12.8 Behavior modification for dogs that are afraid of people or pets (client handout #9, printable version available online)

There are many different stimuli that can frighten your dog or lead to an aggressive response. Although fear can lead to avoidance and escape attempts, the dog that is defensive or aggressive when it is frightened can pose a serious danger. This handout is designed to help improve or resolve fear of people and other animals. Fear can be generalized to all people or all animals of a certain type (e.g., children, strange dogs) but can also be quite specific so that fear may only be exhibited with specific people (e.g., delivery men with beards, small white dogs).

Treatment of fear

The plan involves repeatedly exposing the pet in a controlled manner to the type of person or animal that causes fear, and pairing that exposure with something the pet really likes. In time, the pet should actually look forward to and enjoy being with the person, although there may be some limits on how much you can expect your dog to tolerate. For example, not all dogs will be comfortable with physical contact (petting by people) or playing with other animals.

Desensitization is used in combination with counterconditioning to change the pet's attitude or "feeling" about people or animals from one that is negative to one that is positive. Desensitization involves controlled exposure to situations or stimuli that are weaker or milder than will cause fear. This can be done by beginning the sessions with the stimulus (person, other animal) sitting or staying far enough away so that the pet is not anxious. Counterconditioning is then used to change the dog's response to the stimulus by associating the dog's favored rewards (food, toys, play) with the stimulus. The dog is then gradually introduced to similar but progressively more intense stimuli paired together with the presentation of a favored reward. If an inappropriate response (fear, aggression, attempts at retreat) is exhibited, then the dog should be moved slightly farther away so it can calm, take the reward, and end the session with a positive outcome.

Response substitution is used to train the dog to display a new acceptable response (e.g., sit or lie down calmly) each time it is exposed to the stimulus. Again, rather than attempting to overcome an intense response, the training should be set up to expose the dog to stimuli at a low enough intensity that fear is not evoked. Before training with fearful stimuli, begin a program of structured interactions where every time your dog seeks attention, you only give the attention for behaviors you want your dog to learn. Be consistent and predictable and your dog will quickly learn. For example, asking your dog to sit, lie down, or go to its bed (or waiting until it does one of these behaviors) before giving attention will teach your dog that these are the behaviors that get rewards. This is a win-win situation. Not only do you train the behaviors you want, but you give the dog control over its rewards, since it now can learn what behaviors are rewarded. Rule structure reduces a dog's anxiety and teaches desirable behaviors. Also use food, play, and treats in the same way to train the same behaviors in other situations. Once your dog is responsive to these commands when there is no fearful event, then training to overcome its fears can begin. A head halter and leash can be used to ensure success and high-value rewards used to mark and reinforce an acceptable relaxed response. You may also consider clicker training.

You will heighten the pet's fear or anxiety if you respond with a raised voice, agitation, or punishment. How the stimulus reacts also affects your dog's response; therefore, ensure exposures begin with stimuli that are well controlled, mild, and non-threatening. Avoid all further fear-evoking stimuli until you are ready for successful exposure. The goal is to reward only desirable responses. Therefore, it is critical that rewards are not given until your dog is calm, settled, and displaying the behavior you want it to learn.

Steps for treating a pet that is afraid of animate stimuli (people, other animals)

1. Know the signs of fear; identify all stimuli and situations that cause fear (e.g., children playing, tall men).
2. Prevent your dog from experiencing the stimuli except during conditioning sessions.
3. If there is aggression associated with the fear, then your dog should be trained to wear a head halter or basket muzzle so that safety during exposure exercises can be ensured.
4. Train the dog to relax on cue in the absence of any fear-evoking stimuli. Work on the cues you plan to use when you begin exposure. Outdoors, you might focus on walking with a short amount of slack leash ("heel"), sit and focus and turn and walk in the other direction ("walk away"). Indoors, "sit" and "focus," "down" and "settle" or crate and mat exercises might be most useful. A head halter can be used to ensure success.
5. Once the dog will reliably focus, settle, and accept rewards in a variety of environments, then training can progress to include exposure to controlled levels of the stimulus.
6. Set the pet up to succeed. A familiar dog or person can be used as the initial training stimulus to ensure that your dog will relax and take rewards as soon as it sees the stimulus (e.g., dogs on the street, visitors at the door).
7. For both counterconditioning and response substitution, the dog's favored rewards should be used. Save the rewards of highest value for training sessions and exposure to the stimuli.
8. You will need to develop a gradient for introduction to the fear-evoking stimulus so that initial exposures are mild. Setting up sessions with good stimulus control can be difficult and take some forethought but is essential for successful counterconditioning and response substitution.
 - (a) First, list all stimuli that might incite fear or anxiety. Stimuli may be sights, sounds, smell, or touch. There may be multiple stimuli that need to be improved. For example, a dog that is fearful of children on bicycles may need to be desensitized to bicycles, children, and bicycle motion separately.
 - (b) Once each stimulus is identified, a means of controlling the stimuli along a gradient of increasingly greater intensity must be developed. A gradient can be designed using distance from the stimulus (far to near), similarity (e.g., beginning with least similar to what causes fear and moving to more similar), activity level (low to high), noise level, location (from calmest to most problematic), and familiarity (train to family members before strangers). If the dog is calmer or more responsive to a trainer or particular family member, that person should work with the dog first.
 - (c) Advance along the gradients very slowly. If you proceed through a step too quickly and the pet responds fearfully, relax, and allow the pet to settle. Using a leash and head halter, it is often possible to calm the dog with a gentle pull to get eye contact and release when calm. Otherwise move back to a distance where the pet calms. Once the fear response has ceased, give the valued reward. At first the animal or person should avoid eye contact and walk back and forth at a distance that does not cause fear.
 - (d) The favored reward is paired with success and calmness at each new step. Ideally give the reward as soon as the dog looks at the target (LAT). If the dog shows no aggression and looks away, or looks at you, removing the dog can also serve as a valuable reward (in addition to the food reward). Always end each session on a positive note.

Continued

Box 12.8 Behavior modification for dogs that are afraid of people or pets (client handout #9, printable version available online)—cont'd**Example**

A dog might be most fearful of young boys at a distance of 15 meters (50 feet) or less while playing in front of the house. Four gradients could be used: distance, appearance, location, and actions. For distance, exposures would start at 20 meters (65 feet) (i.e., beyond that which would evoke the fear response) and move progressively forward a few meters at each session as long as the dog takes the rewards and shows no fear. The appearance gradient might start with exposure to adults or teenagers before younger boys. The activity gradient might begin with two people standing quietly and progress gradually to more intense play, and a location gradient might begin with off-property training such as boys playing at a distance in a park. If the fear was toward boys on bicycles or roller blades, then desensitization and counterconditioning with the bicycle or roller blades would also be necessary. One method might be to use a family member for training the dog to make positive association with

bike riding, before counterconditioning to children standing with the bike and then riding the bike.

Fear/anxiety toward other animals

The approach is similar to that outlined above.

For aggression toward other animals, stimuli that might cause anxiety are visual: physical characteristics (e.g., species, breed, color, size, age), postures, facial expressions and actions, odors, and sounds (e.g., growl). As the other animal begins to interact with your dog, tactile cues may also be a factor to consider, so progress slowly with each new stimulus. Always know and accept your dog's limits.

Be confident, calm, and make sure your dog is responsive to commands and motivated for the rewards to ensure successful outcomes. A leash and head halter will provide more control if safety is an issue.

Box 12.9 Desensitization and counterconditioning for cats that are afraid of people or other cats (client handout #10, printable version available online)

The plan involves repeatedly exposing the pet in a controlled manner to the type of person or animal that causes fear, with the exposure minimized so that the cat will take a favored reward each time it sees the stimulus until a positive association is made.

Desensitization is used in combination with counterconditioning to change the pet's attitude or "feeling" about the stimulus from one that is negative to one that is positive. Desensitization involves exposure to people, animals, or situations that might cause fear but at levels that are minimal enough that your cat will adapt. Counterconditioning is used to change the cat's response to the person or animal by associating the cat's favored rewards with each exposure. The cat is then gradually introduced to gradually more intense stimuli (e.g., closer) paired each time with the presentation of the favored reward.

Response substitution is where the cat is trained to display an acceptable behavior (toy chase, come, fetch) for favored rewards each time it is exposed to the stimulus. This training can only be used if the cat can be successfully reward-trained to respond eagerly to one or more commands. As with counterconditioning, the training should begin with a stimulus of low enough intensity to ensure the cat responds to the command and reward.

Favored rewards (treats, play) must be saved for reward training and exposure training so that the pet can make the positive association between the stimulus and the reward. Avoid all fear-evoking situations until you are ready for exposure training as each fearful event may increase the cat's fear. If you become agitated, raise your voice, or punish the pet, you will only serve to heighten your cat's fear or anxiety.

Finally, be certain to train only with calm, controlled stimuli. The goal is to make each association with the stimulus positive and nonfearful. If you begin to expose your cat and it becomes fearful, remove the cat from the situation and begin subsequent training at a less threatening level.

Fear of people and pets – desensitization and counterconditioning – common first steps

- Begin with safe and effective control of both your cat as well as the stimulus that causes fear. Initially the cat and the stimulus (other cat, people) can be separated by confinement behind a common solid door (until the cat adapts to the odor and sounds of the stimulus) or across a glass or screen door, which would allow for safe visual exposure. A positive association can be achieved

(countercondition) by giving the pet favored rewards with each exposure.

- The next step is gradually to increase the intensity of exposure while ensuring the cat continues to take rewards. If barriers have been used, the goal is gradually to get the cat into the same room with the stimulus (person, pet) at sufficient distance that the cat will take the food or treat.
- If the cat exhibits fear at any step in the desensitization program, go back to the step that was successful and repeat until the pet will readily take rewards before progressing again. Always end on a positive note. It is critical that the owner and the stimulus at all times remain calm and show no fear and that the owner uses no punishment as these will increase fear and anxiety.

Fear of people and other animals

1. Know the signs of fear and identify the fear-eliciting triggers. For some cats, fear may be generalized so that all strangers or other animals cause fear. Other cats may be afraid of specific people or pets. Until prepared to move forward with conditioning exercises, avoid all fear-evoking stimuli.
2. Setting up safe exposure: because a fearful cat can quickly become aggressive, precautions must be taken before beginning treatment. Some method of safe exposure will need to be devised. Initial exposure to stimuli should be sufficiently mild and gradual that no fear is exhibited. A good starting point is to have the cat adapt to the sounds and smell of a visitor by giving the cat rewards while housed in an adjacent room. Videos or audio tapes might be useful for introducing the sound of a stimulus at low intensity. If the cat becomes anxious and cannot be called away with a command and reward, a large blanket or towel can be wrapped around the cat to move it into another room until it calms.
3. Each stimulus will need to be presented along a gradient beginning with exposures to the stimulus that do not cause fear, and moving slowly to higher intensities with each positive outcome. To develop a gradient you will need to determine how to control the stimuli that cause fear (situations, people, places, or animals) so that they can be gradually intensified for counterconditioning. If the cat is fearful of a particular person or type of person (e.g., child), the training can begin with milder stimuli, such as a calm adult or teen. The stimulus intensity is then

Continued

Box 12.9 Desensitization and counterconditioning for cats that are afraid of people or other cats (client handout #10, printable version available online)—cont'd

gradually increased. The person may move slightly closer during training sessions, but should not move closer until the cat takes the reward and is calm. Next, the goal will be for the person to give or offer the reward to the cat, or to throw it near the cat so that it approaches to take the reward. Each step should end on a positive note, with the cat receiving a reward before proceeding to the next level. Withhold rewards except when the stimulus is present.

4. Control can be provided with a leash and harness, keeping the cat in a crate or carrier, or by closing doors to block escape (provided the cat does not become aggressive or more fearful). The cat should be positively conditioned to accept any new control device prior to exposure.
5. Food or treats that have the highest appeal should be identified and saved exclusively for desensitization, counterconditioning, and reward training. Favored toys, catnip, and even short periods of affection may also be effective for counterconditioning if these are important to the cat and reserved for the exposure sessions.
6. Training the cat to respond to verbal cues such as “sit,” “come,” or “go to a place” before every reward is given may provide a useful, predictable pattern of interaction. Cats may also be taught tricks.
7. If the cat is too reactive or anxious to learn new behaviors then medication or pheromones may reduce anxiety and promote positive learning.

Treatment – fear of other cats: desensitization and counterconditioning

1. Introduction of a new cat into the household or reintroducing a cat in the home to one that it fears must be done slowly and cautiously so that each association has a positive outcome.
2. Once the cats have been adapted to each other across a common doorway, there must be a safe means of control so that the cats can be put in a common area. It may be helpful initially to place a

towel with the cat's scent in the other cat's confinement area for a week before beginning visual exposure. Another approach is to allow one cat out into the common area while the other remains housed in its own room and to alternate for a few days so that they are each familiar with the common area. Also add as much space for perching, climbing, and hiding as is practical, and maintain separate litter stations to reduce conflict. It may also be helpful to offer a collar-activated cat door so that each cat can learn to go back into its own room without the other cat following.

3. When placing the cats together maintain sufficient distance that they show no fear and will take treats, catnip, or play toys when together. A body harness on one or both cats or crates for one or both cats may be useful when first introducing them to a common area together.
4. At this point, if both cats have been in crates, the more fearful cat may be allowed out, and the food, treats, toys, or catnip should be given progressively closer to the other cat's crate. When both cats can be placed out of the crates in the same room together while eating at a sufficient distance to avoid fear, a leash and harness on one or both cats may be necessary for safe control. If one or both cats do not eat, move the food bowls farther apart. If things go well, the dishes can be moved slightly closer together during subsequent conditioning sessions.
5. Progress slowly! Allowing either cat to become fearful or aggressive sets the program back. The cats must remain separated except during counterconditioning sessions.
6. When the cats appear ready for some freedom to roam the home, it might help to place a bell on the assertive cat to help the family supervise and so the other cat knows when it is near.
7. Drugs and pheromones (e.g., Feliway) may be useful during a behavior modification program to reduce apprehension and allow the cat to learn pleasant associations.

children can all lead to problems. Preparing the family pet for the new baby or the arrival of any new child into the family (e.g., adoption, remarriage) includes taking steps to ensure that the changes are gradual and not overwhelming for the pet, and reviewing household rules so that the family directs the pet into the desired behaviors to give the pet predictability.³⁴

Many families take for granted a positive relationship between children and pets. However, a recent study indicates that dog owners often have limited knowledge of dog behavior and are unaware of the factors that might lead to dog bites to children.³⁵ Pets don't innately know how to behave around children, and young children can't be expected to understand animal signaling; in fact, most don't know what to do and what not to do around pets. Dogs that are most likely to have social problems are the ones that have had little contact or a previous unpleasant experience with babies or children, and have had little training. Genetics also plays a role in the dog's sociability, predatory instincts, and temperament, which may have an impact on how the dog interacts with children. Cats can be unpredictable around children, from avoidance to intense interest. Fortunately, most problems can be avoided with some forethought and training.

Dogs and children

Preparing puppies for children

Preparation for a good relationship between the pet and children begins when the dog is a puppy. To accomplish this, there should be frequent opportunities for the young pup to meet children during its early months of life. The puppy should be introduced to children when they are calm and treats should be used to facilitate introductions. Puppy classes that encourage family attendance can be a way of meeting children in a controlled environment. Early positive interactions help prevent the development of fear, avoidance behavior, and aggression toward children when the pet is older. Another concept the young pup needs to learn is that being touched by people can be a pleasant experience. However, the reality is that most pets will have some limits on when, how frequently, with whom, and the quality and type of contact that they will tolerate or enjoy.

All family members should make a point of gently and positively handling the puppy in all the ways that a child might touch it. Making positive associations (e.g., with treats or during play) while touching the tail, ears, and body, and grasping the collar as well as teeth brushing, grooming, and nail trimming should help the dog adapt to contact with all

Table 12.2 Steps in the management of pets with fear of people

Step	Comments
Identify stimuli and thresholds	- It is important to identify the signs of fear and specific stimuli that cause the pet to be fearful so that effective behavioral modification can be implemented. For example, the pet may not be afraid of all men, just those with beards - The distance between the pet and strangers, as well as behaviors or actions that trigger fear - Consider the location, distractions that might enhance or reduce fear (e.g., other dogs) and the person who is training
Establish a gradient of stimuli	- If the distance at which the pet recognizes a person is 15 meters and the distance at which it begins to show signs of fear is 8 meters, exposure should start between these two distances - The pet with fear of young children might first be introduced to older children. Pets that are fearful of babies can be exposed to blankets with a baby's scent and a low-volume tape recording of the baby. Pets afraid of men with beards might be introduced to family members with a fake beard. Similarly, pets afraid of men in uniforms may first be approached by family members or women in uniforms. Also consider the limits as to the realistic endpoint to ensure safety
Desensitization and counterconditioning	- Select a quiet location with few distractions where the pet is most comfortable for training. Make sure the pet is physically controlled (e.g., leash and front control harness, leash and head halter) to prevent escape, ensure safety, and guide the pet - Determine the pet's favored rewards so that these can be used for counterconditioning to the stimulus - Very slowly decrease the distance between the pet and the person incrementally as positive associations are made - The pet is then gradually exposed to people with slightly different characteristics in a variety of situations for rewards
Response substitution and differential reinforcement	- The goal is to teach the pet to display an acceptable response e.g. focus on owners (Handouts 23, 26) that is motivationally and physically incompatible with the undesirable response - Develop a stimulus gradient as with desensitization - Ensure that the pet and the stimulus are well controlled so that an appropriate acceptable response can be achieved - Determine the pet's favored rewards - In the presence of the person, but at a distance beyond the fear threshold, the pet is asked to respond to a command that is predictive of a consistent reward, e.g., "sit and watch" (see Box 7.2, client handout #23, for training dogs to settle) - A favored reward is given to mark and reward the correct response - In some cases, a novel noise such as a squeak toy or a shake of a treat jar might be used to get the pet to focus on the owner and get the desirable response - With each positive association, slowly decrease the distance between the pet and the person - Next, the pet is gradually exposed to people with slightly different characteristics in a variety of situations - In "look at that" the dog is exposed to the stimulus subthreshold and is taught to look at the stimulus calmly
Controlled exposure	- Controlled exposure is most likely to be effective if the stimulus is mild, owners remain calm and positive, and the pet is effectively restrained in place until it habituates - Flooding is not recommended as each exposure that does not end in a positive or calm outcome further aggravates the problem, and unduly exposes the pet to fear - Some recent formalized training methods include LAT (look at that) where the dog is given a highly valued reward counterconditioning for looking at the target b) BAT (behavioural adjustment training) where the dog is removed from the situation (functional reward) for looking away or deferring. Adding a favoured reward will also countercondition.^{1,2} - Confinement crates and body harnesses for cats and head halters for dogs may be helpful for calm and safe restraint until the pet habituates
Drugs and pheromones	- Benzodiazepines (alprazolam, diazepam) can reduce fear and anxiety and might be utilized before an exposure session. When the desired response is achieved, the drug might be gradually reduced. However, in some cases, they may disinhibit fearful and timid pets to become aggressive. Clonidine and trazodone have also been used prior to exposure sessions in dogs. These drugs might be combined with ongoing use of a selective serotonin reuptake inhibitor - For generalized anxiety, impulsivity, and particularly intense responses (high arousal and long refractory period), selective serotonin reuptake inhibitors such as fluoxetine, paroxetine, or sertraline might be used on an ongoing basis - Bupropion can be effective for mild fears and anxiety, but could also disinhibit and increase aggression - For medical treatment of pathological states meeting the Pageat criteria, see Chapter 22
Pheromones	Feliway and Adaptil (formerly DAP) pheromones may be useful for reducing anxiety. FeliFriend, which is present available only in Europe, may help to reduce interspecific and intraspecific fears and anxiety (see Chapter 9). Supplements such as L-theanine, alpha-casozepine, or HarmonEase might also be used for mild anxieties alone or concurrent with drug therapy

1. McDermott L. Control unleashed. Cleanrup Productions; 2007.

2. functionalrewards.com.

parts of the body, which might be similar to what might be encountered with a child. Any type of physical punishment, threats with a hand, or forceful interactions (e.g., pinning, roll over) should be avoided. All pets must learn that the human hand is friendly and not to be feared (i.e., associated

with treats, receiving toys, and affection). If the pet associates hand movement with discomfort, it might bite when the child moves a hand toward it.

Some dogs show aggression when approached while they eat. This behavior might be avoided by teaching the young

pup that it is good to have company at dinner time. A family member could occasionally sit on the floor with the puppy while it eats. During this time, treats can be intermittently added to the food bowl or offered to the puppy while eating. Combine this with gentle petting while giving the treats. The owner can pick up pieces of kibble from the bowl, and hand feed them to the puppy. The bowl can also be periodically removed for a few seconds, and a small piece of meat or cheese added and placed back on the floor. Family members should occasionally drop a piece of meat or a chunk of canned food into the bowl as they walk by. By doing these exercises, the pup will learn to look forward to having people nearby at meal times and that humans will not steal their food. However, if any of these exercises cause fear or apprehension the action should cease and the owners should seek veterinary guidance. Repeatedly taking the food bowl away while the pet is eating without a positive association (e.g., trade for meat) may just irritate the pet and should be avoided.

Preparing the adult dog for the new baby

The first thing to consider is the dog's temperament. All types of aggression should be considered potentially dangerous, especially if the dog growls or snaps when touched, disturbed while eating, playing with toys, or resting. If the dog exhibits any type of aggression this should be resolved before the baby arrives. Even if the dog gets along well with children, the child that inadvertently gets too close to the dog that exhibits territorial aggression at a window may be injured. Young children are more likely to be bitten by family pets or familiar dogs than unfamiliar dogs with minimal provocation.^{36,37} Therefore, even if improvement is achieved, the owners should be aware of any potential risks and have a practical and realistic understanding of the limits as to when and how the child should interact with the family dog.

As soon as the mother learns of her pregnancy, some thought should be given to preparing the dog for the inevitable changes. A dog is likely to become anxious if the routine, environment, or the way the owner interacts with it is changed or lacks predictability. Therefore gradual adjustments should be made before the baby arrives. Feeding, exercise, and play schedules, as well as sleeping and resting areas and any new rules (e.g., rooms the dog is permitted to enter, furniture on which the dog is allowed to sleep, jumping up during greeting, barking at the window), will need to be put into place ahead of time to fit the family's situation once the baby is home.

If the owners are consistent and predictable in their responses, the dog should quickly learn those behaviors that get rewards and those that do not. This is particularly important when giving attention. If the pet gets attention by nudging, head pressing, pawing, or licking, the owners must stop rewarding these behaviors as they are not acceptable ways to get attention and could be problematic if the baby or child needs care or attention (e.g., changing, feeding). By consistently ignoring these behaviors they should eventually cease (extinction) provided the pet learns a new way to get attention. The pet may initially be confused and frustrated and may escalate the behavior (extinction burst) into more intense attention seeking that might include scratching, jumping up, barking, grabbing, or even biting. If the owners

even occasionally give attention for these behaviors, they will inadvertently reinforce more intense behaviors. Therefore well before the baby arrives, the owner should begin a program of structured interactions and predictable consequences (learn to earn), so that the pet learns that calm and settled behaviors are the way to get rewards. This effectively puts the rewards (affection, eating, treats) under the dog's control by consistently and predictably training that only calm responses (sit-watch, down-stay, lying on its mat) will be rewarded (see client handout #13 on structured interactive training, C.14). The owner can use commands, food lures, a head halter (which can be left attached with a leash dragging) or just wait and watch until the desired behavior is displayed and then immediately reward (clicker training can be particularly effective). If the owners are consistent and predictable the pet should soon learn that these calm behaviors are the way to get attention.

Commands should precede any reward (sit, focus, down and settle, or go to a mat or crate) to ensure the dog learns to respond to these cues immediately and consistently in a variety of locations and situations. Giving rewards inconsistently will delay training, add to the dog's confusion and anxiety about how to get what it wants, and may ultimately reward undesirable behaviors. Other behaviors that are permitted now, but won't be permitted when the baby is at home, must also be addressed (e.g., jumping up, barking at windows, lying on furniture, climbing into the lap) by training and rewarding desirable alternatives (e.g., sit for all greetings, rest on your mat).

The dog might also be prepared for the homecoming by exposing it to the noises and smells of the new baby. If the dog gets upset when it hears strange sounds, a recording of baby noises (cooing, crying, screaming) can be used in a desensitization and counterconditioning program (see Appendix B for product sources). The recording should first be played at sufficiently low volume that the dog shows no anxiety, while jovially requesting obedience commands for tasty food treats or some play time. Very gradually the volume can be increased as the weeks go by until the pet seems comfortable with the noises at high volumes. A towel or blanket with the baby's scent can be taken home from the hospital to prepare the pet for the new smells that will arrive with the baby. The object should be presented while the dog is relaxed and taking treats or playing with a favored toy. Some dogs will be anxious when the parent is carrying or nursing the new baby. Testing the dog by carrying around and fussing with a doll (especially one that actually moves and makes crying sounds) can be useful. If there is any anxiety, a positive association should be made with this doll using favored food rewards, affection, or a favored play toy (see Box 12.8, client handout #9, printable version available online, and Appendix C, form C.10, client handout #17, printable version available online).

When the baby comes home

If the dog has not seen his mistress for a day or two, there will probably be a great deal of excited greeting behavior when she arrives with the baby. Therefore, if someone else carries the baby into the home, the mother can greet the dog without worrying that it might accidentally scratch the baby. It is important to set the dog up to succeed by anticipating problems and taking steps to prevent them. By taking this

approach, scolding, punishment, and anxious feelings associated with the presence of the baby can be prevented.

The owners should wait until the excitement has died down and the pet is calm before introducing the dog to the baby. That may be later in the same day or a few days afterward. The dog should be brought to meet when calm and under good control. Careful judgment must be exercised in deciding when to allow the dog close enough to sniff. If there is a chance the dog might jump, use a leash. If more control is needed, a head halter and leash can be utilized. If there is *any* likelihood that the dog might bite, consider using a lightweight basket muzzle. If it can be predicted that a head halter or muzzle is likely to be utilized, it would be best for the owners to accustom the dog to wearing these before the arrival of the baby. The family should *never* (no matter how sweet, trustworthy, or friendly the pet appears) allow an unsupervised dog around the baby.

It is especially important to be vigilant when the baby is crying, kicking, or waving its arms. This could cause a curious dog to jump up and injure the infant. During these times, it is wise to train a desirable response such as a “down-stay” away from the baby and give favored rewards, or have the dog go to its room, mat, or yard with a special chew toy. The owners should immediately seek additional guidance if there are any concerns that the pet exhibits any predatory signs (stalking, strong focus, unusual interest) around the baby.

Whenever the dog is in the room with the baby, the family should remain positive with one family member focused on taking the dog across the room and rewarding acceptable behaviors (e.g., calm, responding to commands, orienting to the baby in a calm manner) with treats, food, play, or affection. With success, the exercises should gradually be moved closer to the baby. The idea is to promote relaxed behaviors and to make the dog look forward to the baby's presence by pairing the baby's presence with rewards. This association can be made more dramatic by reducing the amount of attention or treats the dog gets when the baby is not around. In this way, the dog learns that the presence of the baby is associated with positive events, and the absence of the baby is not. The biggest mistake owners make when they try to shape their dog's behavior is to concentrate on telling the dog what is wrong, instead of rewarding what is right.

As children grow up

As the baby continues to grow and mature, the dog will be exposed to a variety of new stimuli from crawling to toddling to walking and even trying to approach or take things away from the dog. Even if the dog has adapted nicely to a particular stage in the child's life, owners must always be prepared for a change in the relationship between the child and pet. Interactions between dogs and young children should always be supervised. The spontaneous, active behavior of children is exciting for most dogs, and might elicit rough play, chase, or anxiety. Encouraging the child to give tasty food rewards to the pet for responding to “sit” commands is a simple way to teach the pup to keep its paws on the ground and expect good things whenever it is around children.

An important thing to remember is that children are great imitators. Members of the family must not do anything to

the pet that they do not want the child to do. This includes hugging, physical punishment, teasing, and rough play. Children don't know how to interact with animals, so they must be taught how to approach, handle, and play with the pet. For example, fetch is a great game for the child and dog to share. While some dogs will tolerate physical contact, the child will be safer if taught to avoid making contact around the eyes, ears, and head, and to pat the dog along its side. Hugging, getting face to face, and lifting are not well tolerated by some dogs and are best avoided. In fact, young children are more likely to be bitten on the face or head; boys aged 5–9 are at highest risk, and most dog bites in young children are by the family dog, in contexts of resource guarding, or benign interactions such as hugging or petting.^{35,38,39}

Children should have some degree of positive control over the pet and this can begin at a relatively early age. Once the child is talking, a family member can hold the child in the lap and teach the pet to sit when the child gives a command and drops a treat on the floor as a reward. This can be done by coaching the child to say the command word at the same time as the adult. Gradually, the adult can phase out the command and the child can give the command alone. This can also be done with other commands. When the child is old enough, he or she can be taught the same rule structure as the adults so that the dog consistently learns to lie down or sit calmly before giving it things that it wants (toys, treats, play). Nonaggressive pets can be taught to look forward to having the child present while they eat if an adult carries the child and has him toss small pieces of food in or near the bowl.

Children must also learn rules about other pets. The most important rule is that the child must *never* pet another family's pet or give it food unless an adult gives permission. Dogs on a leash, by food, by toys, sleeping, tied down, or running loose should never be approached. All family members must also follow these rules as a model for the child's behavior. Children must be taught to recognize and avoid potentially dangerous behaviors. The owners should review aggressive postures (growling, loud barking, hair standing on end) and fearful behaviors (trembling, crouching, ears back, tail tucked) so that the child learns to avoid these animals. If the child is approached by a dog that is acting aggressively, he or she should stand very still like a tree, say nothing, hold the arms against the body, and avoid eye contact. If the child is on the ground or knocked down, he should curl into a tight ball, cover the ears with his fists, and remain still and quiet until the animal moves far away. Some excellent references are available such as dogscatskids.com, bluedog.com, doggonessafe.com, bowwowow.com (see Appendix B).

Cats and children

How the cat responds to a new baby or children will depend upon previous experiences as well as the cat's genetic temperament. Some cats will adapt quickly to children and new babies by either ignoring them or eventually seeking them out for investigation or social contact (e.g., bunting or cheek rubbing), while others may immediately be inquisitive, playful, and affectionate. While investigation, seeking affection, and social contact may be desirable, these behaviors

must be well supervised since they can still lead to injury to the child, or inappropriate responses from the child to the pet. Fortunately most fearful cats will avoid as long as they are not restrained and have sufficient opportunity to retreat to an area in which they feel safe and comfortable. However, cats that respond with aggression can be particularly dangerous.

There are three basic considerations for helping cats to adapt to new babies or children. The first is to adapt the cat's schedule, permitted behaviors, owner interactions, and environment slowly so that it is prepared for the arrival. The second is for the owners to supervise all interactions with the cat and the baby to ensure safety, and so that positive interactions can be rewarded. The third is to help the child adapt to the needs and tolerance of the cat so as to prevent the development of behavior problems.

Advanced preparation of the home

Many cats can become stressed and anxious when there are changes to their daily routine, social interactions, or environment. The cat's response may be a change in behavior or attitude with respect to humans or other cats (increased fear and avoidance, irritability, or aggression), urine or stool marking of the environment, or displacement behaviors such as overgrooming and hair loss. There may also be an impact on the cat's physical health, such as a change in appetite (decreased or increased), activity level (increase or decrease), sleep-wake cycles, or even medical conditions with a stress-induced component (e.g., feline interstitial cystitis).⁴⁰ Owners should consider how the daily schedule, social interactions, and household will need to be changed when the new baby arrives and begin to adapt the cat slowly in advance of the new arrival. Whenever possible change should be made slowly and should be associated with positive events and interactions such as food, treats, affection, and play. For example, if the cat initiates play by chasing and play attacking moving objects, the owners should initiate and provide play sessions and play toys to meet the cat's needs. If there are rooms, counters, and areas of the house that will be out of bounds for the cat when the child arrives, then the owners should begin in advance to keep the cat out of these areas, and teach the cat where it is allowed to sleep, play, and explore. It may also be advisable to set up any new furniture in advance of the baby's arrival, as some cats can be particularly sensitive or reactive to new structures and new odors.

Some cats are anxious when they hear strange sounds. For these cats, a recording can be obtained of baby noises (cooing, crying, screaming; see resources in Appendix B). The recording should be played at a level that is low enough to cause no anxiety while offering tasty food treats, play, or catnip toys. The volume should be gradually increased over several weeks until the cat seems comfortable with these noises at high volumes. To prepare the pet for the new smells that will arrive with the baby, a towel or blanket with the baby's scent can be brought home from the hospital. The cat should then be taught to associate the object with favored rewards. On occasion, some cats may become anxious or overly investigative when the owner carries, changes, or nurses the new baby. Testing the cat by carrying around and fussing with a doll (especially one that actually moves and

makes crying sounds) can be useful. A positive association should be made with this doll using favored play toys, treats, or food rewards before the baby arrives (see [Box 12.9](#), client handout #10, printable version available online, and Appendix C, form C.11, client handout #16, printable version available online). If there is concern that additional safe control will be required to supervise and introduce the cat and baby, then training the cat to wear a body harness or giving it a separate room in which it can be housed comfortably can be extremely useful. Some cats adapt better to change by the placing of a Feliway diffuser in the environment.

When the baby arrives

The simplest rule to help with the arrival of the baby is for all interactions with the cat and the baby to be supervised and kept positive, while monitoring for potential problems (fearful, overly aggressive, overly affectionate, or overly playful). Any major problems should be addressed with the aid of a behavior consultant. At all other times, such as when the baby is sleeping or playing in its playpen, access should be prevented. Even an affectionate cat could choose to lie down next to the young baby, and this may be particularly dangerous for babies that cannot yet raise their heads or turn over. When the cat and child are together, all appropriate interactions should be reinforced. It can be particularly helpful to identify all things positive to the cat (food, affection, play, catnip, treats) and provide them when the baby and cat are together, while reducing their availability when the baby is not around. If the cat reacts fearfully or unpredictably or there is a potential danger or risk to the new child, then access must be prevented and a body harness might be used to ensure future safe introductions. If there are any changes in the cat's general demeanor, health, activity level, feeding, drinking, and elimination, these are signs that should be immediately reported to the clinic. Occasionally, Feliway or anxiolytic drugs combined with the behavioral program can help the cat to adapt.

As children grow up

As the child grows and becomes more mobile and interactive, the relationship between the cat and child may change. Fear and anxiety, as well as exuberant playful behavior, could become problematic. As always, supervision to assess the cat's response to the child and the child's interactions with the cat is the best way to ensure that desirable responses are reinforced and any undesirable responses are identified. If problems do arise, preventing interactions may be the safest plan, but a program of careful and entirely positive reintroduction might effectively improve the relationship.

Fear of animals

Depending on how a pet was socialized and what types of experiences it had when it was young, it may be fearful of members of the same or of other species. Poor maternal behavior and lack of social experience with other members of one's own species during neonatal development (e.g., hand rearing) and through the sensitive period for socialization (see [Chapter 2](#)) can result in a pet that is fearful of other animals of its species or unable to communicate effectively.



Figure 12.1 When introducing a new kitten to a household there may initially be fear of unfamiliar people and animals (such as the household dog).

This can be dangerous if the fearful pet responds with aggression. Effective socialization, including puppy or kitten classes during the sensitive period, as well as ongoing positive interactions through adulthood, may prevent problems (Figure 12.1). On the other hand, should problems begin to arise, early intervention with desensitization and counterconditioning might rectify the problem.

On occasion, a single traumatic event can lead to fear of that animal. This is a particular concern in cats which do not have a good repertoire of reconciliation behaviors once problems arise. For example, if one cat in the household hears a sudden, frightening noise while another pet is nearby, it may redirect its arousal and aggression to that pet, and the relationship may be altered by the single event. Owners that try to suppress behaviors directed toward other pets (exuberance, lunging) by using harsh punishment techniques may classically condition further fear and anxiety.

Diagnosis and prognosis

Exposure to an individual animal or species elicits signs of fear. Fear may result in aggression by some pets, while others respond by cowering, remaining motionless, or attempting to escape. These behaviors may be associated with autonomic signs, including trembling, hypersalivation, elimination, and dilated pupils.

Pets that exhibit fear from an early age (8–12 weeks or younger) with no known exposure to traumatic environmental events may be very difficult to treat successfully. The prognosis is better for cases in which the pet was adequately socialized to animals, the problem started during adulthood, the problem is of short duration, the pet does not have other concurrent fears, and the owner can successfully control the environment and the pet to be able to improve its relationship with other animal(s) gradually.

Management and treatment

Successful treatment requires that the owners first identify all stimuli or situations that elicit a fear response. Next, the owner must take steps to expose the pet to these stimuli or situations under controlled circumstances. This is accomplished by desensitization and counterconditioning. Response substitution can be used if the pet can be taught to relax and settle on cue and then reinforced during exposure to the stimulus.

Except for counterconditioning sessions, the fear-evoking stimulus should be entirely avoided. Counterconditioning should begin in a neutral environment with a well-socialized, behaved, trained, and controlled animal as the stimulus. There should be sufficient distance between the animals so that both are relaxed. The starting distance should be at a level where the pet can recognize the other animal, but not close enough that any fear is elicited. The fearful pet should receive something it values highly (food, play, grooming, social attention) each time it is exposed to the stimulus without showing a fear response. As the session progresses, the distance between the animals is gradually reduced. It is often helpful to keep one or both pets on a leash and head halter, or body harness. Muzzles may be needed for some situations to ensure safety. For cats, it might be useful to have one or both pets in crates or on a leash and harness to maintain sufficient distance for desensitization and counterconditioning. To increase the value of the reinforcer and ensure its association with the stimulus, it should be saved for counterconditioning sessions. In time, the pet should learn to associate the presence of other animals with positive experiences. At any point if a pet is exposed to a fearful stimulus and is unable to habituate or calm, this not only becomes a welfare issue for the pet but is likely to intensify the fear response further (sensitization).²⁸

Punishment should not be used with fearful pets since, even when it can successfully suppress undesirable behaviors, it actually conditions further fear. In fact, if a pet is playfully lunging, chasing, or overly rambunctious with another pet, owners who try to suppress the behavior with punishment or corrections might condition new fears. Similarly, any fear, frustration, or anger on the part of the owner, or fear and aggression by the other animal, will further fuel the fear response. Another concern is that the fear response is an attempt to increase the distance between the pet and the stimulus. Therefore if aggression is successful (negative reinforcement) the pet will continue this strategy. This means that exposure training must be set up to ensure success as each unsuccessful exposure further aggravates the problem (see Boxes 12.8 and 12.9 Table 12.3, and Figure 12.2).

Prevention

Fear of animals can often be prevented with healthy neonatal care and adequate socialization with other animals. Puppy socialization classes (see avsabonline.org for guidelines) and kitty kindergarten can be particularly beneficial. Adequate supervision and control are important when introducing the pet to other animals in order to ensure that the interaction is amicable. Play that is too rough or leads to fear can be counterproductive; therefore be prepared to separate the animals with commands, treats, or a gentle pull on a leash

Table 12.3 Steps in the management of pets with fear of other animals (for intercat aggression, see Box 12.9)

Step	Comments
General	In reality, while every attempt should be made to stay below the threshold for fear for counterconditioning and response substitution, there may be times when the threshold is surpassed and fear begins to emerge. At point the owner could: (1) promptly and calmly move the pet to a location where the stimulus is no longer fear-evoking; (2) use drugs in the future to help further reduce fear; or (3) determine if the fear is mild enough that the pet might habituate by continuing exposure (i.e., controlled flooding)
Identify stimuli	Know the signs of fear; then all stimuli and situations that cause the pet to be fearful must be identified, including specific behaviors and characteristics (large dogs, barking, physical contact). Each stimulus must initially be avoided to ensure safety and prevent further conditioning of the fear response
Identify threshold for fear	Identify the characteristics and actions of the animal and a distance that would incite fear
Establish gradient for stimulus exposure	- Design a gradient for exposure that begins below the level that would cause fear (distance, characteristics, actions) and that progress can be made small increments - Dogs or cats that respond to a recording of the audible or visual stimuli of other animals might first be exposed and desensitized to controlled levels of the recording
Desensitization and counterconditioning	- Choose a quiet location with few distractions where the pet is calm to begin exposure - The owner might require a leash and head halter or leash and harness for physical control to maintain safety and distance from the stimulus - Begin at sufficient distance or with a stimulus that is least likely to cause fear (e.g., small white dog if fearful of large black dogs). As soon as the pet views or looks at (see LAT table 12.2) the stimulus, ask it to sit for a favored food reward. Toys. If the pet sees the stimulus and defers or looks away, immediately removing the pet can be another powerful reward (see BAT table 12.2) - Very gradually decrease the distance between the animals or begin to use animals that more closely resemble the fear-evoking stimulus (e.g., small black dog for dogs fearful of large black dogs) in subsequent trials as long as the pet continues to show no fear and takes the reward. Make favored rewards contingent on exposure to the stimulus
Response substitution and differential reinforcement	- The goal is to replace an unacceptable response with an acceptable one using reward-based training - Develop a stimulus gradient as with desensitization - Determine the pet's favored rewards so that these can be used to reinforce desirable behaviors during exposure - Train the pet immediately and consistently to display the behaviors to be used for exposure (e.g., walking on loose leash, sit and focus, down and stay, or go to a mat). During walks, a safety command for turning and walking away (e.g., let's go) can also be useful to ensure outcomes are safe and positive. For cats, come, play time, treat time or go to your room commands might be most practical - A leash and head halter or front control harness are useful for dogs as they aid the owner in achieving the desirable response (sit and focus, walk along, turn away) and provide a safe way to remove the pet if necessary. For cats, a leash and harness can help ensure success - Ensure that the stimulus is calm and not threatening - The pet should be exposed at a level just below the fear threshold, cued to focus on the owner and settle as soon as it views the stimulus, and rewarded for a successful outcome. If the pet begins to show any signs of fear, it might be possible to regain focus and calm the pet with a control device (e.g., head halter) and commands. Otherwise move to a distance where it can be calmed - A mild disruptive device such as a squeak toy might successfully interrupt the undesirable behavior so that the pet reorients to the owner. Similarly, a bark-activated spray collar may interrupt some dogs. If the behavior ceases, the owner may use the short window of opportunity to train and reinforce desirable behavior. Do not use these devices if they cause fear - With each successful outcome the stimulus proximity or intensity can be gradually increased
Controlled flooding	- Controlled flooding is most likely to be effective if the stimulus does not threaten, owners remain calm, and the pet is restrained in place until it habituates and is then immediately rewarded. Use of controlled exposure is only appropriate if the pet's fear will quickly dissipate as an increase in fear would be a welfare issue and further sensitize the pet - Confinement crates or head halters may be helpful for safety and physical control
Drugs and supplements	- Drugs can be helpful in reducing fear and panic states. For generalized anxiety or responses that appear impulsive or excessive (e.g., high arousal, long refractory period), selective serotonin reuptake inhibitors (fluoxetine, paroxetine, sertraline) or perhaps clomipramine might be useful. Buspirone, pheromones, and some natural supplements (see Chapter 9) might also be useful to reduce mild fears and anxiety - Additional drugs such as benzodiazepines (e.g., alprazolam), clonidine, or trazodone might be used to reduce fear prior to exposure. Benzodiazepines may inhibit learning and memory. Therefore, as the pet improves, gradually lower doses should be used - Warning: anxiolytics may disinhibit, making some fearful animals more confident and aggressive



Figure 12.2 Desensitizing and counterconditioning to reduce fear: These cats are being exposed through a viewing window cut into a door, while associating each exposure with treats (counterconditioning). Notice the window is lifted off the floor to allow tactile interaction. (Courtesy of T. DePorter.)

if arousal becomes excessive or anxiety is noted. Continued ongoing reward training and positive exposure to other pets should be continued into adulthood.

CASE EXAMPLE

Tom, a 2-year-old male cat, was recently adopted from a shelter by a family with a 6-year-old female Labrador retriever. The dog showed no desire to interact with the cat and ignored it for the most part. Whenever the dog entered the room the cat's eyes would dilate, it would hiss, show piloerection, and run away.

The owners initially separated the pets at all times except during training sessions. Twice daily, the dog received a long walk, followed by a reward training session to train relaxed behaviors before exposure to the cat. During the desensitization and counterconditioning sessions, the dog was restrained on leash by a family member at one end of a large room. At the same time, the cat was brought to the opposite end of the room at a distance where it was far enough that it would take pieces of favored foods (chicken and tuna). The cat was controlled with a leash and body harness to which it had previously been conditioned. The dog was encouraged to look at the cat and was given an immediate reward if it remained relaxed in place. Gradually, the pets were moved closer during the reward sessions while maintaining leash control. Eventually, the cat was allowed free roam in the house. Whenever the dog entered the room, the cat was called to the owners for a treat. High perching and resting areas were made available to the cat and a small cat door was placed into the cat's play room to provide an opportunity to avoid the dog.

Noise phobias

Sensitivity to noise is one of the most common concerns of dog owners, affecting as many as 40–50% of dogs.⁴¹ One study found that exposure to fireworks, engine noises, banging doors, vacuum cleaners, and loud voices before 6 months of age might have a protective effect.⁴² Genetic sensitivity to the stimulus, a traumatic experience associated

with noise exposure, social transmission (learned or from other fearful dogs), and owner responses may contribute to the development and progression of the problem.^{42,43} Dogs with generalized anxiety may be fearful of a broad range of stimuli. About 90% of dogs with storm phobias have noise phobias, but only 75% of dogs with noise phobias have storm phobias.⁴⁴ Because not all pets with a fear of noises meet the criteria for phobia, the terms “noise sensitivity” and “noise aversion” might more accurately describe the dog's signs until a diagnosis is made.⁴³

Diagnosis and prognosis

In most cases, the fear-eliciting sound is loud and quite distinct (e.g., gunshot, thunder). If the family is present they will see the fear response (e.g., tremble, salivate, hide, attention seek, attempt to escape).

Many noise phobias can be managed successfully with a combination of environmental management, behavioral modification, and medication. The prognosis varies greatly depending on the individual, the duration of the phobia, the ability to avoid stimuli during treatment, the household, owner expectations, and the success in finding an effective, controllable stimulus for exposure exercises. Successful resolution of thunderstorm phobias is possible for some dogs, but management and medication may be necessary for many dogs throughout their lives.

We know that sound phobias can have a genetic component, which might explain why treatment of some storm-phobic dogs can be such a challenge. Other factors lending to a negative prognosis include the presence of other concurrent fears and phobias, and the fact that avoidance of the stimuli is usually impractical, making desensitization and counterconditioning less effective. In addition, thunderstorms are pervasive (i.e., no identifiable source) and have multiple stimuli, including sounds of rain, thunder, lightning, and possibly barometric pressure and static charges. In comparison, gunshots, cars, trucks, or other noises that might cause fears or phobias have an identifiable source and can be more practically reproduced for desensitization and counterconditioning. Another issue is that desensitization and counterconditioning take time and commitment, and compliance is variable. Therefore management, rather than resolution, might be a more reasonable goal, at least in the short term.

Management and treatment

An important initial step in the treatment of noise fears and phobias is management of the pet and environment to minimize or prevent exposure until desensitization and counterconditioning can be effectively implemented (Table 12.4 and Box 12.4, client handout #8, printable version available online). As the problem is often a serious concern for the owner (e.g., disturbing sleep, household damage, concern over the pet's anxiety) and further exposure generally worsens the problem, some method of reducing the intensity of the sights and sounds should be the initial focus. During noise exposure the owner should develop strategies for helping the pet to calm, such as taking it to an area where it feels most secure and attempting to distract the pet with play, chew toys, or “jolly time.” Retreat to a safe hiding place is a normal,

Table 12.4 Management of pets with noise phobias (see Client Handout 33)**Protect from overwhelming exposures to fear-evoking noises or thunderstorms**

Find a room, area of the home, or confinement area where the stimuli can be minimized and the dog most easily distracted. Some pets will retreat to a closet or furnace room for avoidance. Where possible it might be best to accept and work with the area that the pet has chosen. Light-proof window shades may seal out visual stimuli and storm shutters may provide some degree of sound reduction

Nested cardboard boxes, or a blanket or sound-reducing crate cover (Thunder Hut), might be placed over the crate to mute the sound. Be certain to maintain sufficient air circulation

Distractions such as favored chews and food-filled toys, companionship, and the background sounds of a TV, radio, favored CD, fan, white noise or music with a distracting beat (e.g., drums, rap) may take the pet's focus away from the frightening stimuli

A leash and head halter can help to calm some dogs and aid the owners in achieving focused and settled outcomes

Commercially available products to reduce sound stimuli include Mutt Muffs and Thunderband

Commercially available products to reduce visual stimuli include Doggles and Calming caps

Gentle pressure around the body, although not scientifically validated for dogs, may help to calm. Pressure wraps include Anxiety wrap and Thundershirt, which in one preliminary laboratory study reduced fear in dogs that had previously been conditioned to a thunder recording.¹ The Storm defender cape is purported to reduce the electrical charge associated with thunderstorms. One study found no difference when compared to a placebo cape; however both groups reported improvement²

**Do not punish
Ignore fearful behavior if the dog can recover from the fearful event spontaneously**

Use favored rewards (treats, toys) to reinforce any decrease in anxiety and to help the dog to return to a positive emotional state more quickly

Assist the phobic dog

If the dog's reaction is extreme or disproportional to the stimulus, then it will be necessary to try and help the dog settle. Try distracting the pet with a head halter, novel and favored chews, toys, treats, or games, or perhaps a storm party (run about the home excitedly tossing treats and toys for the pet)

Desensitize and countercondition

Select a calm location with few distractions for training. Train the pet to settle and relax in the area for rewards and to enter the area voluntarily and on cue

Desensitize with a CD reproduction of the noise and countercondition with favored rewards reserved exclusively for associating with the noise recording

Provide anxiolytic support

Use a selective serotonin reuptake inhibitor or clomipramine on an ongoing basis year-round or through the time of year when phobia-inducing noises might be expected

Consider adjunctive therapy on an as-needed basis prior to the storm with a benzodiazepine, clonidine, trazodone, or propranolol

Natural products such as Adaptil (formerly DAP), Hormonease, L-theanine, alpha-casozepine, or aromatherapy may also prove beneficial

¹Landsberg GM, Milgram NW (2011) Conducting laboratory trials for the assessment of anxiety in veterinary behavior. In: Proceedings of Canine Conference on Behavior, Cognition, and Aging in Companion Animals. Toronto.

²Cottam N, Dodman NH (2009) Comparison of the effectiveness of a purported anti-static cape (the Storm Defender) vs. a placebo cape in the treatment of canine thunderstorm phobia as assessed by owners' reports. Appl Anim Behav Sci 119:78–84.

appropriate, and adaptive response to storms. Next, you'll need to find a method of controlling or modifying the stimuli for desensitization and counterconditioning. Controlling the volume or distance from the stimulus to the subject can be used to set up a gradient of stimuli. A starter pistol can be muffled with a towel, enclosed in a box, or used from a distance for gunshot aversion. Tape recordings of thunderstorms and camera flashes can be used for dogs that are afraid of storms. Recordings are available for most noises that might be aversive, including fireworks, gunshots, cars, trucks, motor cycles, vacuum cleaners, hot air balloons, and more. (For sources of noise desensitization tapes, see Appendix B.)

Before starting desensitization and counterconditioning, the pet should be reward-trained to go to a site to relax and settle. A leash and head halter may be an effective way to direct the pet to the area successfully, and may also aid in getting the pet to calm and focus more quickly during desensitization and counterconditioning. Desensitization is intended to expose the pet to a low-enough level of the fear-evoking stimulus (in this case the recording) while the pet remains relaxed. Rewards are then paired with the sounds of thunder (counterconditioning). By identifying and saving the pet's favored rewards for each desensitization session, the dog learn to associate food with exposure to the recordings. An enthusiastic response to gradually increased levels of intensity might then transfer to actual storms, so that favored treats might then be associated with storms themselves. Stimulus reduction, and products that might further help to reduce storm anxiety, might be used concurrently (Table 12.4). Positive distraction, such as playing a favored game, giving a favored reward such as a peanut butter-filled toy, or even a knuckle bone or marrow bone (if safe), or throwing a thunderstorm party might take the pet's focus away from the storm while making positive associations. To throw a party, start by making unusual noises that distract the pet (but do not cause fear), such as a squeaker, party whistle, crinkling or ripping paper, or tearing open cardboard boxes. If the pet is distracted the person should jump up, run to the kitchen, and grab a handful of meat or cheese treats and toss them to the pet while talking in a loud, happy, upbeat tone.

If the phobic response is strong, medication will most likely be needed. For control of anxiety and phobias, selective serotonin reuptake inhibitors (SSRIs) (fluoxetine, paroxetine, sertraline) or tricyclic antidepressants (TCAs) (clomipramine) are most commonly used. They may take 2–4 weeks to become effective. Benzodiazepines such as alprazolam or diazepam can be given on an as-needed basis and are often used to augment these drugs by administering 1–2 hours prior to a fear-evoking event. They might even have some value during or after the storm to speed recovery and in theory perhaps to induce amnesia of the event. When benzodiazepines are ineffective or cause side-effects, clonidine or trazodone might be given prior to the noise exposure. Selegiline is sometimes used for noise phobias associated with chronic anxiety, and can be used concurrently with benzodiazepines but only after complete withdrawal of any SSRI or TCA. Other drugs that might be added or combined are phenobarbital or acepromazine (for sedation but not anxiety), or pindolol and propranolol (see Chapter 8). Natural therapeutics such as Adaptil (formerly

DAP) or supplements such as *Harmonease*,⁴⁵ *alpha-casozepine*, *L-theanine*, *melatonin*, or *aromatherapy* might also be considered as part of the treatment regime (see [Chapter 9](#)). Extra-label drug use and drug combinations should be used cautiously, with informed owner consent and under close supervision by the owners to monitor for efficacy or potential side-effects.

Studies have demonstrated improvement using a desensitization and counterconditioning program with CD (Sounds Scary) and pheromone *Adaptil* (formerly DAP) or with a combination of desensitization and counterconditioning to a storm recording combined with *clomipramine* for seasonal use and *benzodiazepine* on the day of the storm.^{46,47}

Prevention

The best way to prevent fears and phobias is to expose pets to as many different stimuli as possible while they are still young. As early as 2 weeks of age, puppies and kittens should be exposed to a wide variety of mild stimuli, including noises, lights, surface textures, and odors. Habituate to a variety of stimuli, especially during the socialization period but continuing into adulthood. Begin counterconditioning immediately to any stimuli that evoke fear.

CASE EXAMPLE

Bernice, a 3-year-old intact female Bernese mountain dog, became very fearful and distressed on the Independence Day holiday weekend each year when neighborhood children were setting off fireworks. She would pant, pace, hypersalivate, and whine endlessly.

As the holiday was approaching, the owners were advised to train Bernice to settle on her bed which was fortuitously located in a laundry room in the basement because it was cool and comfortable for Bernice but also furthest away from the outdoor sounds. The windows had already been fitted with storm shutters against the risk of hurricanes, which no doubt would also have caused Bernice fear. At least twice daily after each walk, Bernice was taken to her bedding area and taught to settle for food-stuffed toys and chews while a calming music CD was played. When fireworks were expected, Bernice was given *alprazolam* an hour before they began (and repeated in 4 hours) and taken to the basement where she was given a double portion of food and chew toys and the CD was played. However, since Bernice still paced, trembled, and tried to hide behind the furnace during fireworks, a desensitization and counterconditioning program was instituted with a commercial fireworks CD.

At least five times each week the owner would expose Bernice to the CD while giving favored treats approximately every 30 seconds for 15–20 minutes as long as Bernice remained relaxed. The CD was played just below the volume that elicited anxiety and was gradually increased in intensity the next session if Bernice had relaxed through the previous session. When Bernice would relax even at full volume, the CD counterconditioning exercises were moved to various rooms of the home. On fireworks days from that point on, Bernice would retreat to her basement bed, but would lie quietly and chew on her toys without the use of drugs.

Fear of places

Pets can become anxious and fearful about locations and surfaces, in much the same way they can about people, animals, and noises, and the principles of treatment are

much the same. Every veterinarian is familiar with the pet that is fearful of the veterinary clinic. Many owners report that their pet loves to ride in the car but becomes anxious when it approaches the clinic. Other animals are afraid to be kept in a crate or confined to a room at home. Pets may also become fearful of a particular environment or a particular type of flooring. Some pets may be fearful of travel in moving vehicles and some may even have a fear of certain neighborhoods, parks, or even going to the owner's backyard.

Diagnosis and prognosis

The pet shows predictable, recurrent signs of fear or anxiety (shivering, pupil dilation, submissive urination, escape behavior) when exposed to a specific environment. The problem environment might be a room, surface, building, yard, area of the neighborhood, or car.

The prognosis depends on the pet's temperament, the duration and intensity of the fearful behavior, its early socialization experience, and whether the fear is generalized or due to specific identifiable experiences. Desensitization and counterconditioning can be effective, especially if there is no real threat associated with the location. It may not be effective if the location has been associated with fear-evoking events before it can be effectively implemented (e.g., veterinary clinic visits). Owner compliance (willingness and ability) is also an issue with respect to effectively implementing a desensitization and counterconditioning program.

Management and treatment

Exposure techniques involving habituation, desensitization and counterconditioning, response substitution, and controlled exposure can be used to treat this problem. The pet should first be taught to engage in highly enjoyable activities such as playing tug, chasing toys and treats, playing fetch, playing with another pet, or command training for favored rewards ([Figure 12.3](#)). By identifying the fear-evoking stimuli and presenting them at threshold or subthreshold levels, the pet should be able to be enticed to enter the area (e.g., a stationary car, a room, a crate) for highly valuable rewards or to play favored games of fetch, tug, retrieving tossed treats, or play with a canine playmate. In addition, if high-valued treats or toys are left in an area such as a crate, carrier, or room, the pet might enter voluntarily, in which case clicker training could also be used to mark and reward the desired behavior immediately. Target training (teaching the dog to touch a target object for a reward) can also be useful.

Drugs and natural products might be used adjunctively. As with fear of noises, an SSRI (*fluoxetine*, *paroxetine*, *sertraline*) or a TCA, such as *clomipramine*, might be used for ongoing therapy. For mild fears, *buspirone* might be an option. For chronic anxiety states or emotional disorders, *selegiline* might be another alternative. When additional medications are needed for immediate use prior to an event, *benzodiazepines*, *clonidine* or *trazodone* might be added to an ongoing regimen with an SSRI. Pheromones such as *Feliway* or *Adaptil* (formerly DAP), or oral supplements such as *L-theanine*, *alpha-casozepine*, *Harmonease*, or *aromatherapy* might also help to improve the problem (see [Chapters 8 and 9](#)) ([Table 12.5](#)).



Figure 12.3 Associating treats with the veterinary examination can make the visit a positive experience.

Prevention

Frequent exposure to all types of environments should be employed in a controlled, positive way during the early months of the pet's life so that the pet habituates to a variety of environments and situations.

CASE EXAMPLE

Bijou, a young toy poodle, shook uncontrollably and crouched against the back of her cage during each visit to the grooming shop. The owner was instructed to visit the grooming shop 2–3 times each week for food and play. Bijou was given meat treats in the side yard and car park, progressed into the waiting room, and finally moved into the grooming shop. At home, the owner would frequently turn on an electric razor that was muffled with a towel or would gently brush Bijou while she was given treats. The owners also practiced having Bijou stand on a small table once a day after dinner. Small pieces of meat were given for standing on the table, and later while she was gently brushed. The owner then brought a small container of meat from the previous night's dinner to the groomer. The groomer would frequently give the treats throughout the visit and after 2 weeks could play with Bijou throughout the day without signs of fear. Within 6 weeks, Bijou could be groomed while given an occasional treat without showing signs of fear.

Separation anxiety disorder

Introduction

Separation anxiety disorder is a distressing behavior problem for the owner as well as the pet.^{43,48,49} Dogs with this disorder exhibit exaggerated signs of anxiety when they do not have

access to family members. This problem usually occurs when the owner is away from home, but may occur when the family is home but the pet does not have access to them. Separation anxiety represents approximately 10–20% of cases referred to behaviorists.⁵⁰ However, in senior dogs, up to 50% of referred cases may be due to separation-related distress.⁵¹ This may be a result of underlying medical problems, age-related cognitive decline, or the fact that older pets are less adaptable to change and stress. While these studies indicate the prevalence of separation anxiety referred to behaviorists, it has been estimated that 14–29% of all dogs may have signs consistent with separation anxiety, yet only 13% of owners in one study actually sought assistance.^{49,52}

There are no notable differences in sex, breed, or age in regard to risk of development of separation anxiety, but it is more common in dogs adopted from shelters.⁵³ One possibility is that the dogs may have been relinquished to the shelter because of separation anxiety.^{54–56} However, dogs that experience loss of an attachment figure, and those that were adopted after being abandoned may be more anxious and have less secure bonds than puppies that have been with their owners since puppyhood.¹⁶

Highly social species, such as dogs, exhibit attachment behaviors that serve to maintain social contact and bonds between adult individuals as well as between parents and offspring. When an individual loses contact with the group, the resultant anxiety can trigger behaviors that will attract other members (vocalizations), help remove barriers (digging, chewing), or facilitate the restoration of contact (increased activity) with other members. It is this underlying drive to be with members of the established social group that provides the foundation for the development of hyperattachment problems. In dogs, domestication and selective breeding (genetics) along with early socialization have further contributed to increasingly affectionate, socially dependent, and infantilized dogs which might be predisposed to excessive owner attachment and intolerance to being left alone.^{16,49,57}

When the pet displays anxiety, fear, or phobias during owner departures, there can be multiple causes for the signs, ranging from a mild response as the pet adapts to owner departures to severe panic attacks in which the pet is unable to cope in the owner's absence. Separation distress has been used to describe the presence of these signs in the absence of a specific diagnosis.⁴³ While some puppies will show stress reactions when first left home alone, most of these behaviors do not persist after 1–2 months.⁵⁸ Separation distress reactions that persist beyond the puppy stage are maladaptive and may be indicative of either dysfunctional attachment or perhaps even a pathological state.^{49,59} Some behaviorists (such as those using the French diagnostic approach) use the term "separation anxiety" only for this primary hyperattachment disorder. Puppies that come to expect excessive social interactions following adoption may be unable to handle subsequent decreases in social interaction.⁵² Dogs that were ill as puppies have also been shown to develop more separation-related barking.¹⁶ Dogs that have had obedience training and those trained through positive reinforcement appear to have less separation anxiety and other behavior problems.^{21,60} While these early experiences may influence the development of separation anxiety, it is likely that genetics also plays a role in the disorder.^{16,49}

Table 12.5 Steps in the management of pets with fear of places

Step	Comments
Identify fear-evoking stimuli	Know the emerging signs of fear; Identify all stimuli (odors, sounds, substrate, visual) that evoke fear and avoid, except during reward training and counterconditioning
Establish a gradient of stimuli	- If the pet is most fearful of a room in a specific building, the gradient might start on the porch, in the parking lot, or an adjacent property and extend into the room - If the pet is fearful of riding in a moving car, the gradient would be from beside the car, into the car, engine running and the car moving. It may also be necessary to countercondition to any restraint device (seat belt or crate)
Train with rewards	- Use favored rewards to train behaviors that can be used to achieve desirable outcomes (response substitution). "Sit-focus" and "down-settle" are useful to teach focus and relax but for locations the goal is often to keep the pet moving and motivated, e.g., heel, fetch, get your ball (or any other favored toy), or commands that cue a favored location or activity (e.g., walk, car, yard, dinner) - Other activities that might distract the pet and maintain focus might be roller blading or jogging with the dog, playing games of chase, walking with other dogs, or playing with other pets - Implement a program of structured interactions where the pet learns what behaviors get rewards (e.g., sit for affection, crate for toys) - Use secondary reinforcers such as a clicker to mark and time rewards immediately. Use target training to cue approach and touch for a reward
Desensitization and counterconditioning	- Move to the boundary of an area, give favored rewards that are highly motivating (toys, play, treats), and gradually move forward into the area in small increments (baby steps). This can be used to train a dog gradually to climb steps, go into a car, or move gradually into and through a veterinary clinic. Remember, there may be multiple stimuli such as engine noises and movement with car rides or lifting and examination with veterinary clinics. Desensitize and countercondition to one stimulus at a time. Consider adding a nonslip mat to encourage use of rooms with slippery floors - In an environment which is minimally threatening, play a game or keep the dog distracted and moving while it enters the area (e.g., while jogging, walking with other dogs, playing tug, throwing a treat or toy; playing with or chasing another pet). Reward for use of area (toy, play, treats) - Some pets may enter voluntarily if there is something sufficiently appealing in the area. Dogs may go into a room, crate, car, or upstairs if there is a favored toy, bowl of treats, or playmate to entice them
Response substitution	- Train a desirable behavior with a reward that is incompatible with undesirable behavior to achieve a new response - Start in environments with lowest fear intensity - Use a command or behavior that is sufficiently motivating, such as heel, let's go, or fetch (e.g., throw a toy into an area for the dog to retrieve). Alternately, use a command that is highly motivating (e.g., car, walk, dinner, treat, ball) that is motivating because of previous enjoyable experiences to get the desired behavior (e.g., enter a room, go up steps, enter an unfamiliar building) - Use a head halter and leash to guide the pet and keep its focus while getting and rewarding a desirable outcome
Controlled exposure/flooding	The pet is exposed to a mild fear-evoking stimulus (controlled flooding) until it relaxes
Punishment	Punishment, threats, anger, or even anxiety will increase fear
Drug therapy	- Selective serotonin reuptake inhibitors (fluoxetine, paroxetine, sertraline), tricyclic antidepressants (clomipramine), or buspirone may help with mild fears or anxiety - Drugs that may be used on an as-needed basis or as adjuncts to ongoing therapy are benzodiazepines, clonidine, and trazodone - Natural supplements and pheromones may also occasionally be useful

Other forms of separation distress might be acquired or a component of a more generalized anxiety disorder. For example, separation distress may arise when a dog is suddenly separated from its owners following a period of constant contact or after a sudden change in routine.^{49,52} In fact, any change in the household group or changes to the pet's environment could be a trigger for distress which may be manifested primarily when the owner is absent. In addition, separation anxiety may develop in individuals that have other anxiety disorders, such as noise and storm phobias.^{44,53} These dogs may become dependent on the owners to alleviate their anxiety and the owners' response may further intensify the behavior. Medical problems such as cognitive dysfunction may also contribute to the development of separation anxiety. Separation anxiety is commonly associated

with other anxiety disorders, such as noise and storm phobias^{44,53} (Box 12.10).

Some owners are convinced that the pet is "retaliating" about being left alone or confined. This may be due in part to the fact that objects that are commonly damaged include personal items used by the owner, such as books, clothing, shoes, and sofa cushions. What these objects may have in common is the owner's scent. Having the owners record or monitor their pet's behavior during departure will help to convince them that the underlying motivation is anxiety. The guilty look that the owner sometimes sees on arrival when items have been damaged or the house has been soiled is a fear or conflict response (relieved to see owners but fearful of their response) that is related to the dog's anticipation of something undesirable from the owner. The dog's "guilty"

Box 12.10 Triggers for separation distress

- Change in the owner's routine
- Owner returning to school or work
- Move to a new home
- Visit to a new environment
- Following a stay in a kennel
- Altered social relationships (new baby, new pet, new partner)
- Other fears, phobias, and anxiety disorders
- Medical, cognitive disorders

Box 12.11 Common features of separation anxiety

- The pet is hyperattached to one or more family members
- The pet shows signs of anxiety as the family member leaves
- Problem behaviors usually only occur when family members are absent or when the pets cannot gain access to family members when they are at home
- The anxious behaviors begin very shortly after the family member leaves and often occur even during very short absences
- The pet shows exaggerated greeting behavior

look is a response to owner cues, and not the behavior itself.⁶¹ Treatment for separation anxiety disorder involves developing independence by teaching the owner alternate ways of interacting with the pet, using reward-based behavior modification, making environmental changes, and applying pheromones and medication when necessary.

Medical workup

The initial step is the medical workup. Each pet should receive a thorough physical exam and additional tests to rule out possible medical problems that might contribute to the signs (e.g., housesoiling). Since thyroid disease might also contribute to an increase in anxiety, it is prudent to run a complete blood count, chemistry panel, thyroid, and urinalysis to start, which would also serve as a baseline prior to drug use.

Diagnosis

The diagnosis^{62,63} involves collecting historical information about the pet that reveals hyperattachment to one or more family members, anxiety at the time of the owner's departure, and owner-absent behavior problems for which other medical and behavioral causes have been ruled out (Box 12.11). The most common signs of separation anxiety are vocalization, destructiveness, and housesoiling during the owner's absence (Figures 12.4, 12.5).⁶⁴ Other signs related to the pet's anxiety might include depression, anorexia during departure (which disappears when the owner is home), hypersalivation, vomiting and diarrhea, increased motor activity, excessive licking or grooming, acral lick dermatitis, restlessness, shivering and shaking, stereotypic behaviors such as ritualized circling and pacing, and occasional cases of aggression as the owners prepare to depart. Most signs arise prior to or within the first 30 minutes of departure.^{64,65} Signs may decrease over time or have a cyclical nature ranging from 25 to 60 minutes.^{64,65} External stimuli

can also lead to rearousal.⁶⁴ A video recording or internet monitor can be a valuable means of assessing the problem, as well as monitoring response to therapy.

Differential diagnosis

Although the presence of destruction, vocalization and, to a lesser extent, elimination when the owner departs may be due to separation anxiety, other possible causes for these signs must be ruled out (Table 12.6). Two reasons to consider etiologies other than separation anxiety disorder would be: (1) the behavior also occurs when the family is home; and (2) the problem behavior occurs only randomly instead of consistently whenever the owner is gone. In addition, if signs arise with increasing duration of absence (rather than arising prior to, during, or immediately following departure), separation anxiety is less likely to be the cause. Pets that are crated, confined, or caged may be distressed about the confinement itself and may react with anxiety, destructive behavior, escape attempts, and vocalization without having actual separation anxiety. Therefore dogs that are crated or confined should be evaluated when the owners are at home.

Signs of anxiety in response to departure cues are supportive of a diagnosis of separation anxiety. As the owner prepares for departure (dresses for work, puts on coat, picks up keys, opens garage door), dogs with separation anxiety often begin to display signs of anxiety, including increased activity (restlessness, pacing, whining), depression (withdraws, reluctant to move, "downcast" look, refuses to eat), or physiologic changes (panting, tachycardia, hypersalivation, vomiting).

Prognosis

The outlook is good if the onset is recent, the pet has no concurrent anxiety disorders, the owners can be motivated to change the way in which they interact with the pet, and the pet is responsive to psychotropic drugs. Combining behavior modification with pheromones, SSRIs (fluoxetine, paroxetine, sertraline) or TCAs (clomipramine) given daily, combined with a benzodiazepine (alprazolam, diazepam) or clonidine given 1 hour prior to departures, improves the prognosis above using behavior modification alone^{66–68} (see www.reconcile.com and <http://www.clomicalm.novartis.us/about/about.htm> for details). Some dogs require long-term treatment to maintain control.⁶⁹

Management and treatment

The successful management of separation anxiety must focus on training that consistently and predictably rewards the dog for calm and independent behaviors and removes rewards for attention-seeking behaviors. Although an extensive program specifically tailored to the pet and the owner may be most successful if the owner is willing and compliant, the prognosis appears to be poorest when more (>5) instructions are given.⁶⁵ Therefore the program should focus on a few simple steps, including: (1) gradually shaping more relaxed and independent behaviors while removing rewards for any attention-seeking behaviors; (2) reducing anxiety associated with departure and homecoming; (3) decoupling departure cues from actual departures; and (4) a basic

Table 12.6 Differential diagnosis of separation anxiety

Problem	Differentials
Destructive behavior	Exploration – object play • May be related to scent/texture/odor/taste/novelty • Signs when owners at home but may be suppressed by supervision Activity – energy • Inadequate exercise, mental stimulation Scavenging – usually garbage or food • Signs when owners at home but may be suppressed by supervision Territorial – targets may be windows/doors • Signs when owners at home Other fears and phobias, e.g., noise, storms • Signs when owners at home Predation • Digging, scratching, drapes, window molding, walls and floor boards Barrier frustration – escape attempts from confinement area • May be seen if confined during owner presence Separation anxiety – doors, windows, confinement areas, owner possessions • Predeparture anxiety typically present – may increase immediately following departure
Vocalization	Alarm/outside stimuli – territorial barking • Signs when owners at home but may be suppressed by supervision Social facilitation Play Other fears and phobias, e.g., noise, storms • Signs when owners at home Barrier frustration – distress related to confinement • May be seen when owners at home Medical – sensory loss, cognitive dysfunction syndrome, pain/discomfort Separation anxiety – distressed, whine, high-pitched, howl • May be predeparture signs or immediately following departure
Housoiling	Inadequate housetraining • Signs when owners at home but may be suppressed by supervision Lack of sufficient opportunities to eliminate for age, needs, health • Duration of departure, scheduling Medical – monitor for other clinical and behavioral signs • Increased frequency, volume, urge, decreased control, cognitive dysfunction syndrome Excitement, conflict, or submissive elimination • Generally on owner homecoming, greeting Marking – vertical surfaces, often intact male – selected prominent surfaces • Signs when owners home but may be suppressed by supervision Other fears and phobias, e.g., noise, storms • Signs when owners at home Separation anxiety – other concurrent signs – seldom only sign • Occurs during virtually every departure, even if short and the pet has eliminated outdoors prior to the departure
Note: Concurrent signs, predeparture signs, and timing of signs supportive: video can confirm.	

approach to anxiety reduction by avoiding punishment and giving the pet more control over its environment with structure, predictability, and consistency. For most cases, drug therapy will also be needed to address the pet's intense anxiety (Box 12.12).

The consultant should begin with an explanation of why the pet is displaying the undesirable behaviors. The family needs to understand that the dog is anxious because it cannot cope with separation from them, not because it is mad at them. They also need to understand that the attention, social interactions, and rewards they are giving to their dog may in fact be encouraging attention seeking and attachment. Improvement may be difficult since it requires that attachment be transformed into greater independence by

withdrawing attention except when the pet is relaxed and not pushy. Since any program will take time to implement, some more immediate, temporary steps may be necessary. These may include day care, house sitters, a dog walker, confinement training, or anxiolytics.

Environmental considerations to address immediate concerns

Preventive measures – confinement

Confining the pet to a crate or small room in the home will prevent housoiling and destructive behavior in other areas of the home, but may not be well tolerated and may cause increased anxiety in pets that are not accustomed to

Box 12.12 Management of separation anxiety (client handout #28, printable version available online)

Step	Description
Reward independence	• Teach independence by having your dog rest on a bed or mat with no physical contact. Give treats or toys to keep your dog occupied and gradually increase the length of time and then move further away (ideally into a different room) • Provide structured interactions. Only give the pet attention when it is calm. Ignore attention-seeking behavior until the dog lies down or goes to its mat (see client handout H13) • Use the same rule structure for all rewards – give treats, play toys, food, play only if the dog sits or lies down. Gradually train a longer sit, down, or stay before any reward given • The goal is to have the dog learn to cease all attention-seeking and to sit, lie down, or go to its bed or mat before any reward is given • When your dog approaches for attention, you can use cue words or commands to train your dog to sit, lie down, or go to its mat; however, until these are effectively learned you could: (1) ignore your dog until it offers the behavior; (2) lure the pet with a food or toy reward; or (3) use a head halter to prompt the behavior gently. A clicker or Manners Minder can aid in immediately rewarding and shaping gradually more settled behavior in a select location • Practice each day to increase gradually the length of time your dog settles before rewards are given
Never punish	• Punishment will increase fear and anxiety
Departure cues	• Expose your dog to the cues that are usually associated with departure, e.g., lifting keys, putting on coat, open and shut doors, open garage door without departing until the dog habituates (i.e., these cues no longer predict departure) • Adapt your dog to the departure routine while you are at home (e.g., leaving in crate or kitchen) so that it no longer predicts departure • Depart when your dog is occupied for 15–20 minutes (e.g., special toys, mat, music) and avoid exposing to cues (e.g., go out different door, avoid garage door by keeping car in driveway). Leave unnoticed • Cues that are commonly associated with calmness and your presence might reduce anxiety, e.g., TV, radio, DVD left on
Greetings	• Homecomings should be kept very low-key and your pet should be ignored until it is calm
Social/exercise	• Provide interactive times regularly throughout the day to ensure sufficient aerobic exercise, social time, play, and additional training • Before training inattention and independence, ensure sufficient social time, play, and aerobic exercise have first been provided • Maintain structure and predictability by consistently training the pet that sit, down–stay, or going to its bed (and not attention soliciting) are the behaviors that must be displayed before any reward is given
Departure training	• After your dog has been desensitized to the departure cues, practice short mock departures • The mock departure is a trial for actual departures so give exercise and social time, then take your dog to its resting area, and give high-value toys. Use a unique cue. Add a special non-departure cue that is unique to these training sessions (such as music, CD or a sign on the door) so that the pet learns when to remain calm. After 15–20 minutes, while the dog is resting and occupied, leave for anywhere from a few seconds to a few minutes and return. The duration should be shorter than the time in which it takes the pet to show signs of anxiety. Periods can be lengthened gradually as the pet responds without associated anxiety • The duration of departure should be lengthened on a variable schedule, so that the pet cannot predict exactly how long the owner will be gone. • Use the special (non-departure) cues to predict these short departures (and not for actual departures)
Distractions	• Give highly stimulating toys and chews 15–20 minutes prior to departure and take up when home. Give these toys and chews only when practicing independence training, mock departures, and actual departures, but give the highest value and greatest number for actual departures • In rare situations, having another pet will provide a playmate or distraction
Confinement	• Confining your pet may result in increased anxiety unless the pet is accustomed to confinement while you are at home (crate, child gate, room, pen, tied down). Acclimating the pet to confinement should be done gradually using food and chew toys. Allowing your pet to choose its own desirable resting site and then rewarding its use can improve compliance
Pheromones/drugs	• Fluoxetine a selective serotonin reuptake inhibitor (SSRI) or clomipramine a tricyclic antidepressant are licensed products for dogs that have demonstrated efficacy in conjunction with a behavior program or 2 to 4 months. Other SSRI's or TCA's might be an alternative but no trials have been done to validate efficacy. • Dog-appeasing pheromone Adaptil (formerly DAP) might be beneficial alone or together with drugs. • Benzodiazepines, such as alprazolam and diazepam, clonidine, or trazodone, might be used concurrently with SSRIs on an as-needed basis prior to departures but use of these drugs is off label • Selegiline might be considered for chronic anxiety disorders but not concurrently with SSRIs or TCAs
Monitoring	• To assess the pet's behavior when out of sight or away from home, monitor with a video recorder or monitor (e.g., PetCam)

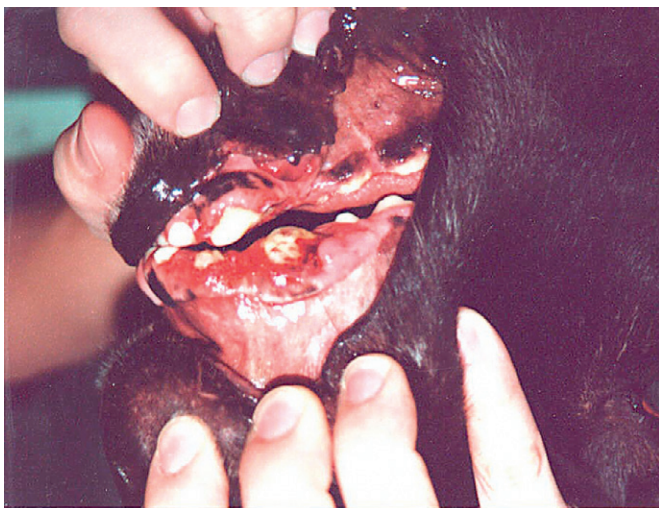


Figure 12.4 Mouth injuries caused by escape attempts in a dog with separation anxiety. (Courtesy of Dr. Kelly Moffat.)



Figure 12.5 Damage to door frame during escape attempts in a dog with separation anxiety. (Courtesy of Dr. Kelly Moffat.)

confinement (Figures 12.4 and 12.5). Some pets should be gradually introduced to the confinement area by placing favored chew toys and treats in the crate when the family is at home until the pet takes the initiative to enter voluntarily. Clues to the best place for confinement might be found by observing the pet and determining if the pet has a place where it feels comfortable when not with the family. The crate might then be set up in the pet's preferred area with its favored toys and treats given exclusively inside the crate; alternately the pet might be confined with its toys and treats in an X-pen, behind a gate or closed door. When crate training is not a viable option, day boarding, hiring a pet sitter, taking the dog to work, or using anxiolytic medication may initially be necessary.

Food, toys, and chews as rewards and distractors

Since anything the dog values is a potential reward for desirable behavior, food, treats, favored toys, and especially attention should be used to train and shape gradually more settled behaviors and independence. Toys of high value might motivate the pet to spend time away from the owner engaged in activities other than attention seeking. Although many dogs will not chew their regular toys or eat when anxious or stressed, new chew toys, or food-type chew toys (e.g., pigs' ears, raw hide dipped in bouillon, cow femurs stuffed with shrimp) may be attractive. Tasty food treats should be hidden inside toys, in packages that the dog must open, or hidden under bowls or boxes around the home in order to keep the pet busy. Reserving the dog's access to special treats during those times when the owners are training the dog to spend time on its own can help to encourage exploration and independence when the owners are at home. While the goal of these toys is to give the dog an activity that it might enjoy when the owners leave, if the toys are given exclusively at departure times, they may themselves become a predeparture cue for anxiety. Therefore, providing these toys for independence training while the owners are at home as well as when the owners depart may avoid association with departure. The toys should be given to the pet before it shows any predeparture anxiety. The goal is to have the pet already engaged in these activities when the owner leaves.

Destructive behavior

If the dog is not confined during departures, preventive measures should be taken to prevent access to items that might be chewed. Applying a bitter-tasting substance to some objects or using an avoidance device in the area may be helpful. A basket muzzle (which allows the pet to pant and drink) may help for short-term prevention but takes away the opportunity for constructive oral activities during departure.

Housoiling

Clean elimination odors and place food bowls, toys, or the pet's bed over previously soiled areas to discourage resoiling. If confinement has been successful it might reduce access to the areas where the pet might soil. However, if the anxiety is not adequately addressed the pet may continue to soil while confined.

Vocalization

Products that suppress barking do not address the dog's anxiety. Playing a radio or white noise and keeping the pet away from doors and windows may reduce exposure to environmental stimuli that might trigger barking. Bark-activated spray collars may suppress barking in some dogs but anxious dogs are less likely to be suppressed. Bark-activated alarms that are placed by a door or window might keep the dog away from areas where barking might be stimulated.

Adding another pet

In rare situations, providing another pet will provide a playmate or distraction for the dog. It does not necessarily have to be another canine. However, this is seldom effective since

another pet is no substitute for the human companionship for which they yearn.

Behavior modification

Rewards for relaxation and independence – structured interactions

The family should encourage and reward independence and relaxation by withdrawing all rewards for attention seeking, and use attention as the reward to shape more relaxed and independent behaviors gradually. Positive punishment must never be used to suppress attention seeking as this adds to the pet's anxiety. Positive reinforcement for desirable behavior will need to be combined with the cessation of rewards for attention seeking (extinction). The approach is to use rewards to train and shape what is desirable; specifically, a gradually longer and more relaxed down, as well as time spent relaxing on a mat or bed away from the owners. When the pet comes for attention, the owner can command the pet to lie down or ignore the dog until the desired behavior is offered. If the pet persists, the owner might need to consider leaving on a leash and head halter for a few days to be able to guide the pet to the proper outcome. Once these interactions are structured and consistent the dog should learn that the down and settled behavior gets attention. One option to teach the pet to spend time in an extended down away from the owners is to lure the pet to the area with treats, food-stuffed toys, or chew toys; a second is to leave the toys and chews in the area so that the pet engages with them voluntarily; while a third option is to leave the head halter attached to guide the pet immediately to the location. Of course, once the pet learns the cues (commands) and the rules, the dog should begin to go to its mat promptly. Clicker training or a Manners Minder (a remote treat dispenser) can be used to reward each use of the area and gradually shape longer and more relaxed behaviors. A radio or white-noise machine might calm and distract the pet during departures; these should be played during each down-stay session. The use of the area can be gradually shaped so that at first the owners might attempt a 10–15-minute down-stay as they remain close by, but should gradually move farther away and extend the time in down-stay until they can leave the room, while the pet remains relaxed for 60 minutes or longer.

Predictable routine and enrichment

Scheduled and predictable social interactions should be incorporated into the daily routine. Before practicing relaxation and reward sessions, the owners should be certain the pet has had sufficient exercise and social time, the ideal being three sessions a day – morning, afternoon, and evening. During interactive sessions, structured interactions should continue. Each toy, treat, or affectionate pat should be preceded by a “sit-focus” or “down-stay” so that the pet quickly learns to control access to attention, play, and treats by calmly sitting or lying down. These interactive sessions also provide a time for the pet to learn clicker training, Manners Minder training, head halter training, or any other techniques that might be incorporated into training.

Departures and predeparture cues

Most dogs with separation anxiety learn to associate specific cues with the owner's departure, which therefore initiate anxiety. Wherever possible the cues should be avoided during actual departure, e.g., by leaving while the dog is occupied, by parking the car in the driveway to avoid garage noises, or by changing into work clothes at the office. Departures should be as calm as possible. The dog can also be habituated to the cues so that they no longer predict the owner is leaving by exposing the pet repeatedly without departing, such as carrying around keys, opening and closing the door, putting on a coat, and opening and closing the garage while staying home.

Greetings

Homecomings should be kept low-key and the dog ignored until it is calm. Alternately the dog can be cued or commanded to settle (sit, down, mat) and rewarded as soon as it is calm. When the greeting with the owner is a high point of the pet's day, the pet can become increasingly more anxious as homecoming time approaches and even more distressed if the owner arrives late.

Mock departures

After the pet has been habituated to the departure cues, the owner might practice mock departures. Prior to leaving, the pet should be given its social time and exercise and then be taken for mat training with a few extra-special toys, music or white noise turned on, and the dog ignored for 15–20 minutes. If the owner has extended the independent training to 60 minutes or more, and the dog no longer responds to departure cues, the owner should be able to leave quietly and return for anywhere from a few seconds to a few minutes with a minimum of anxiety. Each departure should be short enough that it does not incite anxiety and departures can gradually be lengthened on a variable schedule based on how long the pet can be comfortably left alone.

Another approach is simply to leave the pet alone 10–20 times each day for 30 seconds and gradually increase the duration as the days pass. The mock departures should take place at an exterior door with the owner leaving the home, as well as within the home with the owner entering a room, closing the door, and leaving the pet behind. Each time the owner leaves the pet's presence, it is given a toy with a highly palatable meat, cheese, or fish paste spread inside. As the days go by, the pet learns that the owner will always come back, it won't be abandoned, and that whenever the owner leaves it gets something very special so that it looks forward to departures.

Medication

Drugs are generally required in conjunction with behavior modification to improve learning, help reduce the dog's dependence on the owner, and reduce the pet's anxiety. The medications presently licensed for separation anxiety in dogs in combination with behavior modification include the SSRI fluoxetine (Reconcile) and the TCA clomipramine (Clomicalm)^{66,70,71} (see [Chapter 8](#)). In one study, fluoxetine was compared to placebo with no concurrent behavior modification and, while a significant drug effect was demonstrated,

greater and more significant improvement was achieved using a combination of behavior modification and fluoxetine.⁷² Pretreatment physical exams and lab evaluations are important since most psychoactive medications require normal hepatic and renal function to assure proper metabolism.

Other SSRIs, such as paroxetine and sertraline, may also be effective but have not been tested in clinical trials. Similarly, other TCAs such as amitriptyline might be used; however, while there have been no large clinical trials assessing its efficacy, in fact, one study found that amitriptyline improved 56% of cases of separation anxiety compared to close to 75% with fluoxetine or clomipramine.^{65,66,68} While improvement may begin to be seen in 1–2 weeks, generally 4–8 weeks are required to achieve optimal clinical effects and in most cases drugs may need to be maintained for several months. In one follow-up study, some dogs remained on clomipramine for over a year with no adverse effects and 10 of 12 dogs improved further over that time.⁶⁹

Selegiline hydrochloride is a monoamine oxidase B inhibitor that is licensed in North America for cognitive dysfunction syndrome but is also licensed in Europe for emotional disorders and may therefore be useful for anxiety disorders. However, it cannot be used concurrently with TCAs or SSRIs.

Immediate predeparture use and adjunctive therapy

Benzodiazepines such as alprazolam and diazepam may be useful for immediate control of severely affected pets on a short-term or as-needed basis, approximately 1 hour prior to departure. They can be given alone but are more commonly used concurrently with the daily SSRI or TCA. More recently, clonidine and trazodone have been reported to be beneficial prior to anxiety or stressful events as adjunctive therapy with SSRIs or TCAs (see [Chapter 8](#)).

Phenothiazines block dopamine receptors in the brain causing a nonspecific depression of the central nervous system resulting in a reduction of motor function and reduced awareness of external stimuli. They do not reduce anxiety. Therefore their use should be limited to those cases where additional sedation might be needed, in conjunction with drugs for anxiety. For very difficult cases, an SSRI or TCA can be given daily, and a benzodiazepine combined with a very low dose of acepromazine (0.05 mg/kg PO, very gradually increased to effect) can be given 1–2 hours prior to departures.

Pheromones

A dog-appeasing pheromone diffuser (Adaptil, formerly DAP) has been demonstrated to improve signs of separation anxiety in conjunction with behavior modification at a level similar to clomipramine⁶⁷ (see [Chapter 9](#)).

Other natural supplements (see [Chapter 9](#)) and products (see noise phobias, above) may aid in the further reduction of anxiety.

Prevention of separation anxiety

Screening and assessment of shelter dogs and provision of appropriate advice to those who adopt these pets can effectively reduce separation anxiety.^{54,56} Pet owners should be advised to introduce puppies to separation gradually and enforce time away from the owners to help them cope better with spending time alone.^{16,73} Similarly, when the owner anticipates a significant alteration in schedule or in the amount of time spent with the dog, the changeover should be made as slowly as possible. DAP might help the dog to adapt. Medication might also be considered as a preventive, but should be started at least 4 weeks prior to major changes.

CASE EXAMPLE

Dolores was a 4-year-old spayed female German shepherd dog that started exhibiting destructive behavior soon after her owner went back to work following an extended illness and stay at home. Dolores was constantly at the owner's side whenever she was home and frequently nudged, pawed, or whined to get attention from the owner. When the owner was getting ready to leave, she would pace, whine, and tremble. While the owner was at work, she would scratch and chew at the front door and occasionally chew holes in pillows and stuffed furniture. Upon the owner's arrival Dolores became extremely excited. The owner would drag Dolores back to the areas where she was destructive and spank her but this had no effect on curtailing the problem.

Independence and relaxation techniques were described but the owner didn't think they were practical, especially in the short term. Instead, the owner requested drug therapy, as euthanasia was her next consideration. The dog was started on clomipramine (2.0 mg/kg PO bid) for 8 weeks. The owner was instructed that treats, toys, and attention were only to be given when Dolores was calm and not seeking attention. During the owner's meals, Dolores was taken to her dog bed and given her favorite rubber toy with a piece of liver

and a few dog biscuits placed inside. During this time they turned on a favored CD. Throughout the meal, if Dolores started to leave her bed, the owners would command her to stay – when she did stay they would refill her toy in the middle of the meal with more liver and biscuits if it was empty. Dolores was given a long walk, tug toy, and fetch session at least twice a day.

A feeding toy was purchased so that Dolores would eat part of her breakfast meal from the feeding toy. After about 3 weeks of drugs, regular exercise, and mat training the owners planned an actual departure. Dolores was given some exercise and play, returned home, and instructed to lie on her mat. The owner then turned on the CD, gave the dog a new raw hide toy, the rubber-stuffed food toy, and her feeding toy. While the dog was working on its toys, the owner was to leave and return to the room, and on the second or third occasion, departed quickly without giving the dog any attention or any indication of departure. This technique provided the dog with an enjoyable distraction, and a departure associated with minimal anxiety. Combined with drug therapy, the dog improved.

References

1. Russell PA. Fear-evoking stimuli. In: Sluckin W, editor. *Fear in animals and man*. New York: Van Nostrand Reinhold; 1979. p. 86–124.
2. Levine ED. Feline fear and anxiety. *Vet Clin North Am Small Anim Pract* 2008;38:1065–79.
3. Clark JD, Roger DR, Calpin JP. Animal well being. II Stress and disease. *Lab Anim Sci* 2005;57:571–9.
4. Mathew SJ, Price RB, Charney DS. Recent advances in neurobiology of anxiety disorders: implication for novel therapeutics. *Am J Med Genet* 2008;148C:89–98.
5. Stahl S, Wise D. The potential role of a corticotropin-releasing factor receptor-1 antagonist in psychiatric disorders *CNS Spectr*. 2008;13:467–72, 476–483.
6. Phelps EA, LeDoux JE. Contributions of the amygdala to emotion processing: from animal models to human behavior. *Neuron* 2005;48:175–87.
7. Benarroch EE. The locus ceruleus norepinephrine system: functional organization and potential clinical significance. *Neurology* 2009;73: 1699–704.
8. Hsiao JK, Potter WZ. Mechanisms of action of antipanic drugs. In: Ballenger JC, editor. *Clinical aspects of panic disorder*. New York: Alan R Liss; 1990. p. 239–317.
9. Bouret S, Duvel A, Onat S, et al. Phasic activation of locus ceruleus neurons by the central nucleus of amygdala. *J Neurosci* 2003;23:3491–7.
10. McEwen BS, Magarinos AM. Stress effects on morphology and function of the hippocampus. *Ann NY Acad Sci* 1997;821:271–84.
11. Shin LM, Rauch SL, Pitman RK. Amygdala, medial prefrontal cortex, and hippocampal function in PTSD. *Ann N Y Acad Sci* 2006;1071:67–79.
12. Apfel B, Ross J, Hlavin J, et al. Hippocampal volume differences in Gulf War veterans with current versus lifetime posttraumatic stress disorder symptoms. *Biol Psychiatry* 2011;69:541–8.
13. Briley M. Neurobiological mechanisms involved in antidepressant therapies. *Clin Neuropharmacol* 1993;16:387–400.
14. Grove G, Coplan JD, Hollander E. The neuroanatomy of 5-HT dysregulation and panic disorders. *J Neuropsychiatry Clin Neurosci* 1997;9:198–207.
15. Fox MW. *The dog; its domestication and behaviour*. New York: Garland STPM Press; 1978.
16. Serpell JA, Jagoe JA. Early experience and the development of behaviour. In: Serpell JA, editor. *The domestic dog; its evolution, behaviour and interactions with people*. Cambridge: Cambridge University Press; 1995. p. 131–8.
17. Dehasse J. Sensory, emotional and social development in the young dog. *Bull Vet Clin Ethol* 1994;2:6–29.
18. Fox MW. *Understanding your dog*. NY: McCann and Geoghegan; 1972.
19. Hilby EF, Rooney NJ, Bradshaw JWS. Dog training methods; their use, effectiveness and interaction with adult behavior and welfare. *Anim Welf* 2004;13:63–9.
20. Herron M, Shofer F, Reisner I. Survey of the use and outcome of confrontational and non-confrontational training methods in client-owned dogs showing undesirable behaviors. *Appl Anim Behav Sci* 2009 117:47–54.
21. Blackwell EJ, Twells C, Seawright A, et al. The relationship between training methods and the occurrence of behaviour problems as reported by owners, in a population of domestic dogs. *J Vet Behav* 2008;3:207–17.
22. Hsu Y, Sun L. Factors associated with aggressive responses in pet dogs. *Appl Anim Behav Sci* 2010;123:108–23.
23. Blackwell E, Loftus B, Richards G, et al. How do people train their dogs? A survey of training techniques used and training class attendance by UK dog owners. *Proceedings of the 2010 European Behaviour Meeting, Hamburg, ESVCE, Belgium, 2010, 179–81.*
24. Roll A, Unshelm J. Aggressive conflict amongst dogs and factors affecting them. *Appl Anim Behav Sci* 1997;52:229–42.
25. Denenberg S, Landsberg GM. Effect of dog-appeasing pheromones on anxiety and fear in puppies during training its effects on long term socialization. *J Am Vet Med Assoc* 2008;233:1874–82.
26. Sterry J, Appleby D, Bizo L. The relationship between measures of problematical behaviour in adult dogs and age of first exposure outside the first owners' home and attendance at puppy classes. *Proceedings of the 2005 CABTSG Annual Study Day. CABTSG, 2005, 21–3.*
27. Thompson KE, McBride EA, Redhead E. Training engagement and the development of behaviour problems in the dog. *Proceedings of the 7th International Veterinary Behavior Meeting, Edinburgh, ESVCE, Belgium. 2009;77–84.*
28. Corridan CL, Mills DS, Pfeffer K. Predictive models for dogs with fears and phobias. *Proceedings of the 2010 European Behaviour Meeting, Hamburg, ESVCE, Belgium, 2010, 63–5.*
29. Baum M. Veterinary use of exposure techniques in the treatment of phobic domestic animals. *Behav Res Ther* 1989;27:307–8.
30. Hothersall D, Tuber DS. Fears in companion dogs: characteristics and treatment. In: Keehn JD, editor. *Psychopathology in animals*. New York: Academic Press; 1979. p. 239–55.
31. Tuber DS, Hothersall D, Peters MF. Treatment of fears and phobias. *Vet Clin North Am Small Anim Pract* 1982;12:607–23.
32. Voith VL, Borchelt PL. Fears and phobias in companion animals. In: Voith VL, Borchelt PL, editors. *Readings in companion animal behaviour*. Trenton, NJ: Veterinary Learning Systems; 1996. p. 140–52.
33. Walker R, Fisher J, Neville P. The treatment of phobias in the dog. *Appl Anim Behav Sci* 1997;52:275–89.
34. Bergman L, Gaskins L. Expanding families: preparing for and introducing dogs and cats to infants, children, and new pets. *Vet Clin Small Animal Pract* 2008;38:1023–43.
35. Reisner IR, Shofer S. Effects of gender and parental status on knowledge and attitudes of dog owners regarding dog aggression toward children. *J Am Vet Med Assoc* 2008;233:1412–9.
36. Kaye AE, Belz JM, Kirschner RE. Pediatric dog bite injuries: a 5 year review of the experience at Children's Hospital in Philadelphia. *Plast Reconstr Surg* 2009;124:551–8.
37. de Keuster T, Lamoureux J, Kahn A. Epidemiology of dog bites; a Belgian experience of canine behaviour and public health concerns. *Vet J* 2006;172:482–7.
38. Chun Y-T. Dog bites in children less than 4 years old. *Pediatrics* 1982;69:119–20.
39. Avner R, Baker MD. Dog bites in urban children. *Pediatrics* 1991;88:55–7.
40. Stella JL, Lord LK, Buffington T. Sickness behaviors in response to unusual environmental events in healthy cats and cats with FIC. *J Am Vet Med Assoc* 2011;1:67–73.
41. Appleby DL, Bradshaw JWS, Casey RA. Relationship between aggressive and avoidance behaviour by dogs and their experience in the first six months of life. *Vet Rec* 2002;150:434–8.
42. Imura K. The nature of noise fear in domestic dogs. MPhil thesis. Lincoln: University of Lincoln; 2006.
43. Sherman BL, Mills DS. Canine anxieties and phobias: an update on separation anxiety and noise aversions. *Vet Clin North Am Small Anim Pract* 2008;38:1081–107.
44. Overall KL, Dunham AE, Frank D. Frequency of nonspecific clinical signs in dogs with separation anxiety, thunderstorm phobia, and noise phobia, alone or in combination. *J Am Vet Med Assoc* 2001;219:467–73.
45. DePorter TL, Landsberg GM, Araujo JA, et al. Harmonase reduces noise induced fear and anxiety in a laboratory canine model of thunderstorm simulation; a blinded and placebo controlled study.

- Proceedings of the ESCVE/ECVBM annual congress, Hamburg, Germany September 2010.
46. Levine ED, Ramos D, Mills DS. A prospective study of two self help CD based desensitization and counter-conditioning programmes with the use of dog appeasing pheromone for the treatment of firework fears in dogs (*Canis familiaris*). *Appl Anim Behav Sci*, 2007;105:311–29.
 47. Crowell-Davis SL, Seibert LM, Sung W, et al. Use of clomipramine, alprazolam and behavior modification for the treatment of storm phobias in dogs. *J Am Vet Med Assoc* 2003;222:744–8.
 48. Schwartz S. Separation anxiety syndrome in dogs and cats. *J Am Vet Med Assoc* 2003;222:1526–32.
 49. Simpson BS. Canine separation anxiety. *Compend Contin Educ Pract Vet* 2000;22:328–38.
 50. Denenberg S, Landsberg GM, Horwitz D. A comparison of cases referred to behaviorists in three different countries. In: Mills D, Levine E, Landsberg GM, et al, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Ind: Purdue University Press; 2005. p. 56–62.
 51. Landsberg G. The most common behavior problems in older dogs. *Vet Med* 1995;90(suppl):16–24.
 52. Bradshaw JWS, McPherson JA, Casey RA, et al. Aetiology of separation-related behaviour problems in domestic dogs. *Vet Rec* 2002;151:43–6.
 53. Flannigan G, Dodman NH. Risk factors and behaviors associated with separation anxiety in dogs. *J Am Vet Med Assoc* 2001;219:4604–6.
 54. Blackwell E, Casey RA, Bradshaw JWS. The prevention of separation-related behaviour problems in dogs re-homed from rescue centers. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. p. 236–8.
 55. Segurson SA, Serpell JA, Hart BJ. Evaluation of a behavioral assessment questionnaire for use in the characterization of behavioral problems of dogs relinquished to animal shelters. *J Am Vet Med Assoc* 2005;227:1755–61.
 56. Marder AR, VanDriel M, Engel J. A comparison of canine behavior in pre-adoptive and post-adoptive homes. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. p. 262–3.
 57. Landsberg G, Mattiello S, Mills D. Effect of abandonment on attachment behaviour of pet dogs. In: Landsberg G, et al, editors. *Proceedings of the 6th IVBM-CA, Fondazione Iniziative Zooprofilattiche e Zootechniche*. Brescia, IT; 2007. p. 31–2.
 58. Canas S, Frank D, Minero M, et al. Puppy behavior when left alone: changes during the first few months after adoption. *J Vet Behav* 2010;5:94–100.
 59. Parsasarathy V, Crowell-Davis S. Relationship between attachment to owners and separation anxiety in pet dogs (*Canis lupus familiaris*). *J Vet Behav* 2006;1:109–20.
 60. Clark GI, Boyer WN. The effects of dog obedience training and behavioural counseling upon the human–canine relationship. *Appl Anim Behav Sci* 1993;37:147–59.
 61. Horowitz A. Disambiguating guilty looks; salient prompts to a familiar dog behavior. *Behav Processes* 2009;8:447–52.
 62. McCrave EA. Diagnostic criteria for separation anxiety in the dog. *Vet Clin North Am Small Anim Pract* 1991;21:247–55.
 63. McCrave EA, Lung N, Voith VL. Correlates of separation anxiety in the dog. In: *Abstracts of the Delta Society international conference*. Boston; 1986.
 64. Lund DJ, Jorgensen MC. Behavior patterns and time course of activity in dogs with separation problems. *Appl Anim Behav Sci* 1999;63:219–36.
 65. Takeuchi Y, Houpt KA, Scarlett JM. Evaluation of treatments for separation anxiety in dogs. *J Am Vet Med Assoc* 2000;217:342–5.
 66. Sherman-Simpson B, Landsberg GM, Reisner IR, et al. Effects of Reconcile (fluoxetine) chewable tablets plus behavior management for canine separation anxiety. *Vet Ther* 2007;8:18–31.
 67. Gaultier E, Bonnafous L, Bougrat L, et al. Comparison of the efficacy of a synthetic dog-appeasing pheromone with clomipramine for the treatment of separation-related disorders in dogs. *Vet Rec* 2005;156:533–8.
 68. King JN, Simpson BS, Overall KL, et al. Treatment of separation anxiety in dogs with clomipramine: Results from a prospective, randomised, double-blind, placebo-controlled, parallel-group multicenter clinical trial. *Appl Anim Behav Sci* 2000;67:255–75.
 69. King JN, Overall KL, Appleby BS, et al. Results of a follow-up investigation to a clinical trial testing the efficacy of clomipramine in the treatment of separation anxiety. *Appl Anim Behav Sci* 2004;89:233–42.
 70. Landsberg GM, Melese P, Sherman BL. Effectiveness of fluoxetine chewable tablets in the treatment of canine separation anxiety. *J Vet Behav Clin Applic Res* 2008;3:12–9.
 71. Podberscek AL, Hsu Y, Serpell JA. Evaluation of clomipramine as an adjunct to behavioural therapy in the treatment of separation related problems in dogs. *Vet Rec* 1999;145:365–9.
 72. Landsberg GM, Melese P, Sherman-Simpson B, et al. The effectiveness of fluoxetine chewable tablets in the treatment of canine separation anxiety. *J Vet Behav* 2008;3:11–8.
 73. Bradshaw JWS, McPherson JA, Casey RA, Larter IS. Aetiology of separation-related behaviour problems in domestic dogs. *Vet Rec* 2002;151:43–6.

The effects of aging on behavior in senior pets

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As pets age, there are likely to be an increasing number of health concerns where a change in behavior is noticed as the first sign of illness. In fact, for some of the more common medical problems associated with age, including pain, sensory decline, and neurological diseases, such as cognitive dysfunction, the only presenting signs might be behavioral (see Box 6.1 for medical causes of behavioral signs). Therefore, family members will need to be counseled as to the significance of these changes and the importance of reporting these promptly to their veterinarian. Early identification provides an opportunity for early diagnosis and treatment, so that complications may be prevented, further decline slowed, longevity increased, and welfare issues promptly addressed.

Behavioral signs such as changes in activity levels, altered responses to stimuli, altered social interactions, anxiety, altered sleep–wake cycles, housoiling, confusion, or memory deficits may arise as a result of brain aging (e.g.,

cognitive dysfunction syndrome or CDS). These signs are commonly referred to by the acronym DISHA, which corresponds to *disorientation*, changes in social *interactions* with family members or other pets, *sleep*–wake cycle alterations, *housoiling*, and *activity* level changes. CDS is a diagnosis of exclusion in that other primary medical or behavioral problems that might cause or contribute to these signs must first be ruled out. In addition, senior pets can have multiple concurrent problems, making diagnosis much more challenging.¹

Distribution of behavior problems in senior pets

Studies of case distribution of behavior problems in senior pets give some indication as to the most serious owner

concerns. However, this can be misleading since many of the more common or subtle behavior changes seen in the home environment often go unreported. In fact in one study the prevalence of cognitive dysfunction as diagnosed from a questionnaire was 14.2% of all dogs 10 and over with 41% of dogs over 14 affected. Yet, a veterinary diagnosis had only been made in 1.9% of cases, and 85% of cases had not been identified.²

Cases reported to practitioners

In a Spanish study of 270 dogs over 7 years of age presented for behavior problems, 74% of the owners detected at least one behavior problem, two problems in 19.8%, three in 4.6%, and four in 1.3%. Thirty-two percent displayed aggression to family members, 16% aggression to family dogs, 9% barking, 8% separation anxiety, 6.4% disorientation, 6% aggression towards unfamiliar people, 5% housesoiling, 4.2% destructive, 4% compulsive disorders and 3% noise fears.³ Sixteen percent of these cases were diagnosed as CDS. In a second study at a behavior referral practice in St. Louis, of 103 senior dogs, 30% displayed separation anxiety, 27% aggression to owners, 17% aggression to other dogs, 8% compulsive disorders, 5% phobias, 4% anxiety, 3% house-soiling and 1% vocalization. Seven percent of these cases were diagnosed as CDS.⁴ When examining the distribution of behavior cases in dogs of all ages, aggression is by far the most common reason for referral with various forms of anxiety (independent of aggression) representing 15% of the cases or less, while in senior pets behavior problems associated with anxiety appear to be the most common reason for referral (Table 13.1).

In 83 senior cats referred for behavioral consultations, most cats displayed signs of marking or soiling (73%); however, cases of aggression (16%), vocalization (6%), and restlessness (6%) were also serious enough to require referral.¹ When examining the distribution of behavior cases in cats of all ages, there appears to be a strong similarity in distribution, except for a relative increase in vocalization and restlessness in senior cats (Table 13.2).

To examine further the distribution of problems reported by owners in senior dogs and cats, the Veterinary Information Network database (www.vin.com) was searched for the most recently reported behavior problems of 50 senior dogs (aged 9–17) and 100 senior cats (aged 12–22 years). In the dogs, there were 37 cases with signs of anxiety (fear, vocalization, salivation, destructiveness, hypervigilance); 18 with separation anxiety; 13 “wandering”; 11 night anxiety or waking; 9 noise phobias; 7 vocalizing; 2 with stereotypies; and 2 aggressive. Thirty-one dogs had signs consistent with CDS. In the cat cases, 61 were vocalizing excessively (31 at night); 27 had inappropriate elimination; 22 were disoriented; 19 were wandering; 18 were restless; 6 were irritable or aggressive; 4 were fearful or hiding; and 3 were more “clingy” with owners. Since any of these signs can be due to underlying medical problems, this demonstrates the importance of identifying behavioral signs in maintaining the health and welfare of senior pets. While cerebral disease, hypertension, sensory decline, pain, metabolic or endocrine diseases, anemia, neoplasia, drugs or viral agents (e.g., feline immunodeficiency virus) were all considered, in most cases these had been ruled out.¹

Table 13.1 Canine senior case distribution compared to case distribution of all ages

Behavior referral practice: n = 103 >7 years ¹	VIN cases: n = 50 dogs (9–17 years)	Behavior referral practice: n = 1644 (all ages) ²
Separation anxiety 30%	Anxiety 74%	Aggression to people 60.6%
Aggression to people 27%	Cognitive dysfunction 62%	Aggression to animals 17%
Aggression to animals 17%	Separation anxiety 36%	Separation anxiety 14.4%
Compulsive disorders 8%	Wandering 26%	General anxiety 5.7%
Cognitive dysfunction 7%	Night anxiety / waking 22%	Unruly 12.2%
Phobias 5%	Noise phobias 18%	Housesoiling 7.5%
Anxiety 4%	Vocalization 14%	Phobias 3.9%
Housesoiling 3%	Stereotypic behavior 4%	Vocalization 2.7%
Vocalization 1%	Aggression 2%	Ingestive 1.4%

¹Horwitz D. Dealing with common behavior problems in senior dogs. *Vet Med* 2001;96:869–887.
²Bamberger M, Houpt KA. Signalment factors, comorbidity, and trends in behaviour diagnoses in dogs: 1644 cases (1991–2001). *J Am Vet Med Assoc* 2006;229:1591–1601.
 VIN, Veterinary Information Network.

Prevalence of behavioral signs in senior pets

When focusing on the problems that are serious enough for pet owners to seek behavioral guidance, it is much more common for senior pets to go unreported unless practitioners take a more proactive approach in educating pet owners about the significance of behavior changes in older pets and actively inquiring about their presence. In 2005, the American Animal Hospital Association (www.aahanet.org) senior care task force published guidelines which included annual wellness examinations and laboratory screening for middle-aged pets and twice-yearly screening for senior pets. In addition, a critical component of the guidelines as well as those of the 2008 American Association of Feline Practitioners (www.catvets.com) senior care guidelines is the questioning of pet owners to determine if any changes have occurred in their pet's health or behavior. Often the signs are mild or subtle and not necessarily a concern for the owners. In addition, if veterinarians do not educate owners that these signs might be indicative of emerging health and welfare concerns and that many of these problems can be resolved or improved if diagnosed early, the owners will not know the importance of reporting these signs. One practical and efficient way to ensure that signs are identified and recorded is to develop or utilize a questionnaire that the owner can complete at each visit and that is kept in the medical record for future comparison (Form 13.1). A separate and more detailed cognitive questionnaire might also be utilized to record and track behavioral signs for pets in which changes have already been identified (Form 13.2).

Table 13.2 Feline senior case distribution compared to case distribution of all ages

Behavior referral practices: <i>n</i> = 83 >10 years*	VIN boards: <i>n</i> = 100, aged 12–22 years	Behavior referral practice <i>n</i> = 736 (all ages) ¹
Housoiling 73%	Excessive vocalization 61% (night vocal 31%)	Housoiling 56.8%
Aggression to cats 10%	Housoiling 27%	Aggression to cats 25.8%
Aggression to people 6%	Disorientation 22%	Aggression to people 13.6%
Excessive vocalization 6%	Aimless wandering 19%	Ingestive 4.3%
Restlessness 6%	Restless / night waking 18%	Unruly 3.9%
Overgrooming 4%	Irritable / aggressive 6% Fear / hiding 4% Clingy – attachment 3%	Anxieties 2% Vocalization 1.4% Overgrooming 1.2%

*Cases recruited from behavior referral practices: Landsberg (*n* = 25), Horwitz (*n* = 33), Chapman BL, Voith VL (*n* = 25).²

¹Bamberger M, Houpt KA. Signalment factors, comorbidity, and trends in behaviour diagnoses in cats: 736 cases (1991–2001) J Am Vet Med Assoc 2006; 229, 1602–1606.

²Chapman BL, Voith VL. Geriatric behavior problems not always related to age. DVM Newsmagazine 1987;18:32.

VIN, Veterinary Information Network.

It is clear from the publication of numerous prevalence studies that owners do not voluntarily report many of these behavioral changes. In one study owners of dogs aged 11–16 that had no health or behavioral abnormalities noted on their medical records during the annual visit were called to inquire retrospectively if there were any noticeable behavioral changes. Twenty-eight percent of 11–12 year-old dogs and 68% of 15–16-year-old dogs had at least one sign of DISHA.⁵ In another study, CDS was diagnosed in 14 dogs that had visited the veterinarian for a routine annual check-up and reported no behavioral complaints until actively questioned by the veterinarian.⁶ In an Italian study, 124 dogs over 7 years of age were evaluated and, after eliminating 22 with medical causes, 41% had alterations in one category and 32% had signs in two or more categories; therefore at least 73% had signs.⁷ In another study, the prevalence of CDS in 325 dogs over 9 years of age was 22.5%.⁸ Social interactions and housoiling were the most commonly reported signs. Females and neutered males were significantly more affected than intact males. One previous study also identified a trend toward a higher prevalence in neutered males.⁹ A recent study based on a large internet survey reported a prevalence of 5% in dogs 10–12 to 23.3% in dogs 12–14 and 41% in dogs over 14, with an overall prevalence of 14.2%.² Once clinical signs are identified, the prevalence and severity of signs increase with age.^{2,8,10} Studies of behavior signs in aged cats are lacking. However, in one study of 154 owners of cats aged 11 and older, after

eliminating 19 cats with medical problems, 35% of the cats were diagnosed with CDS – 28% of 95 cats aged 11–15, and 50% of 46 cats over 15 years.¹¹ In addition, estimates of the prevalence of CDS in dogs and cats are likely greatly underestimated since deficits in learning and memory likely arise several years before the first clinical signs of cognitive decline appear (discussed below).

It is therefore the role of the veterinarian and staff to inform and educate clients of the importance of reporting these signs. Handouts and web links can be used to educate owners further about geriatric care and questionnaires can be used to screen for problems quickly and extensively at each visit (Forms 13.1 and 13.2).

Causes of senior pet behavior problems

When presented with any behavior problem or change in behavior, the practitioner must evaluate each case to determine first, whether there may be a medical cause for the problem. In the senior pet the diagnosis could be multifactorial, with medical problems, including cognitive dysfunction, environmental effects and stressors, and learning all playing a role. Therefore while it is necessary to take a holistic approach to treatment, each individual component that might be contributing to the signs must first be identified.

Medical causes

Medical differentials for behavior problems are discussed in detail in Chapter 6 (see Table 6.1). However, the practitioner should focus on disease processes that are most likely to affect senior pets. The aging process is associated with progressive and irreversible changes that can affect behavior. In fact, any disease that affects the central nervous system (CNS: including hepatic encephalopathy, tumors, CDS) or its circulation (e.g., cardiac disease, anemia, hypertension) can affect behavior.

Behavior and memory circuits are mainly located in the forebrain, including the limbic system and hippocampus. Therefore a change in personality or mood, inability to recognize or respond appropriately to stimuli, and loss of previously learned behavior might be indicative of forebrain involvement. In some cases, there may also be other concurrent signs such as cranial nerve involvement, seizures, motor deficits, or emesis. Alterations in awareness and responsiveness to stimuli and consciousness might arise from disease of the brainstem or forebrain, as well as from deficits in the sensory system. Pain (e.g., due to arthritis, dental disease) can lead to irritability and fear of being handled. If mobility is affected, the pet may become increasingly aggressive, or may have more difficulty accessing its elimination area. Organ failure, tumors, degenerative conditions, immune diseases, and endocrinopathies, (e.g., hyperadrenocorticism), are more common in older pets and can all affect behavior. Therefore medical screening (physical examination and laboratory tests) is an essential first step in the workup.

If medical problems are diagnosed, it can be a challenge to determine whether the problem is actually causing the behavioral signs. Response to therapy may therefore be an important step in the workup (see Chapter 6 for details). Unfortunately, with age not all medical problems can be

Form 13.1 Senior pet screening checklist (client form #10, printable version available online)

Owner observations are an important aspect of healthcare of all pets, but are especially important in the senior pet. Please complete this questionnaire and return it to our receptionist before you see the doctor. It helps us to ensure that nothing is overlooked, and tells us about some of the signs that might not be evident on a physical examination.

Owner's name _____

Species: Canine _____ Feline _____

Pet's name: _____

Age: _____

Date: _____

Key: 0 – no problem; M1 – mild; M2 – moderate; M3 – severe	0	M1	M2	M3	When did problem begin?
Weight gain _____ loss _____					
Appetite increase _____ decrease _____					
Vomiting _____					
Diarrhea _____					
Colitis (stool with mucus or blood) _____					
Constipation/difficult defecation _____					
Increased drinking _____ Increased urine _____					
Coughing _____ Weakness after exercise _____					
Panting _____					
Lumps/tumors _____ Skin problems _____					
Describe: _____					
Bad breath/sore gums/difficulty chewing _____					
Muscle tremors/shaking _____					
Weakness/incoordination _____					
Difficulty climbing stairs/increased stiffness _____					
Diminished vision _____					
Diminished hearing _____					
Housoiling					
Urine horizontal surface _____					
Urine vertical surface _____					
Bowel movement _____					
Urinary incontinence _____					
Indoor elimination in view of family _____					
Goes outdoors, eliminates indoors on return _____					
Elimination in crate or sleeping area _____					
Impaired learning/memory					
Decreased ability to work _____					
Forgets name/commands/previously learned tasks _____					
Decreased recognition of familiar people/animals _____					
Social					
Decreased interest in petting/affection _____					
Decreased tolerance of handling _____					
More possessive _____					
Increased need or demand for affection/attention _____					
Problems with social relationships with other pets _____					
Disorientation					
Gets lost _____ Confused _____					
Goes to wrong side of door _____					
Can't find dropped food _____					
Confused _____ Can't maneuver around obstacles _____					

Continued

Form 13.1 Senior pet screening checklist (client form #10, printable version available online)—cont'd

Anxiety/aggression					
Decreased tolerance of being left alone _____					
Increased irritability _____ Restless/agitated _____					
Anxiety _____					
Fearful _____					
Phobias _____					
Aggression _____					
Describe: _____					

Purposeless/repetitive activity					
Vocal (whining, barking) _____					
Paces _____ Circles _____ Licks _____					
Stares into space _____					
Self-trauma _____ Sucking _____ Hallucinates _____					
Describe: _____					

Sleep-wake cycles					
Wakes at night/restless sleep _____					
Decreased activity during the day/sleeps more _____					
Apathy/depression					
Less reactive _____ Listless _____					
Decreased interest in food _____					
Decreased self-grooming _____					
Other problems/concerns (or use this space to describe any of the above in more detail)					
List medications, diet or supplements your pet is taking:					
Has your pet been previously diagnosed as having any medical problems? Y/N Describe:					

Form 13.2 Cognitive dysfunction screening checklist (client form #4, printable version available online)

Pet's name:	Age:	Today's date:
Key: 0 – none; 1 – mild; 2 – moderate; 3 – severe	Age first noticed	Score
Confusion – awareness – spatial orientation		
Gets stuck or can't get around objects		
Stares blankly at walls or floor		
Can't find / leaves dropped food		
Goes into wrong side of door; walks into door / walls		
Relationships – social interactions		
Decreased interest in petting / avoids contact		
Decreased greeting behavior		
In need of constant contact, overdependent, "clingy"		
Altered relationship with other household pets – less social		
Altered relationship with other household pets – fear / anxiety		
Aggression -to family members _____; -to unfamiliar people _____ -to family pets _____; unfamiliar pets _____ -Other: _____		

Continued

Form 13.2 Cognitive dysfunction screening checklist (client form #4, printable version available online)—cont'd

Pet's name:	Age:	Today's date:
Response to stimuli		
Decreased response to auditory stimuli (sounds)		
Increased response, fear, phobia to auditory stimuli		
Decreased response to visual stimuli (sights)		
Increased response, fear, phobia to visual stimuli		
Decreased responsiveness to food / odor		
Activity / anxiety – increased/repetitive		
Pacing / wanders aimlessly		
Snaps at air / licks air		
Licking owners _____, household objects _____		
Vocalization		
Increased appetite (eats quicker or more food)		
Restless / agitation		
Activity – apathy / depressed		
Decreased interest in food / treats		
Decreased exploration / activity		
Decreased interest in social interactions / play		
Decreased self-care		
Sleep–wake cycles; reversed day/night schedule		
Restless sleep/waking at nights		
Increased daytime sleep		
Learning and memory – housesoiling		
Indoor elimination at sites previously trained		
Decrease/loss of signaling		
Goes outdoors, then returns indoors and eliminates		
Elimination in crate or sleeping area		
Incontinence		
Learning and memory – work, tasks, commands		
Impaired working ability/decreased ability to perform learned task		
Decreased responsiveness to commands and tricks		
Inability/slow to learn new tasks (retrain)		
Decreased recognition of familiar people / pets		

resolved or improved and some may continue to progress. Therefore, the owner should be provided with realistic expectations and modifications may be required to the pet's environment or schedule to help the family and pet best manage the situation.

Threshold

Even with a comprehensive medical assessment and successful treatment of underlying medical problems, the behavioral signs may persist. One explanation is that it can take

multiple stimuli to “push” the pet beyond a threshold to where a behavior problem is exhibited. For example, a pet with painful arthritis that also begins to lose hearing and sight may startle and become more aggressive when handled or approached by people (e.g., strangers or young children) that the pet previously would have avoided. The threshold has been surpassed by combining pre-existing avoidance behaviors with sensory decline and pain. Therefore the same pet may still accept or tolerate the handling and physical contact of its favored family members. Medical conditions (e.g., gastrointestinal disturbances, metabolic disorders)

might also lower the threshold (level of tolerance), leading to an increase in frequency or severity of anxious or phobic behaviors.

Primary behavior problems

Changes in the pet's environment may also contribute to the emergence of behavior problems. Schedule changes, a new member of the household (e.g., baby, spouse), a new pet, and moving can have an impact on a pet's behavior. This is of particular concern in the older pet which may be more sensitive and less adaptable to change. Another concern is that even if medical problems can be effectively resolved, the behavior problem might persist if the pet has learned that aggression can successfully remove threatening stimuli, or if it has learned that there are new indoor locations and surfaces on which to eliminate. An extensive history is therefore required to determine if there are environmental factors, relationship issues and family responses (consequences), or learned factors that might have played a role in the cause or persistence of a behavioral problem.

The role of stress in health and behavior

As discussed in Chapter 6, stress can contribute to both health (e.g., dermatologic, gastrointestinal, aging) and behavioral problems (e.g., anxiety, compulsive disorders). Stress is an altered state of homeostasis which can be caused by physical or emotional factors. In the aging pet, there is a general deterioration in physical condition, tissue hypoxia, alterations in cell membranes, increased production and decreased clearance of reactive oxygen species, a decline in organ, sensory, and mental function, a gradual deterioration of the immune system, and decreased ability to cope with change. Thus, the senior pet in particular is less able to respond to stress and maintain homeostatic balance. Owners should be encouraged to maintain a stable and predictable environment and schedule; to plan and make any necessary changes gradually; and to monitor pet enrichment programs, especially for cats (see below) to ensure that they have a positive and desired effect.

Cognitive dysfunction and brain aging

Cognitive dysfunction syndrome

CDS is a neurodegenerative disorder of senior dogs and cats that is characterized by increasing brain pathology and gradual cognitive decline.^{1,12–19} The development and validation of tests for assessing cognitive function in dogs, including discrimination, oddity, reversal, attention, and spatial memory, have been instrumental in documenting tasks on which senior and old dogs cannot succeed as well as adult dogs^{1,17,18,20,21} (Figures 13.1 and 13.2); cats can be tested as well (Figure 13.3). For example, visual discrimination learning (learning which of two objects covers a reward) is not usually affected by age in most animals, including dogs. However, if the task is more difficult, such as in size discrimination (i.e., the dog must learn whether a small or large object covers the food; Figure 13.4), aged animals have more difficulty in learning the task compared with younger animals. Tasks requiring the inhibition of a previously

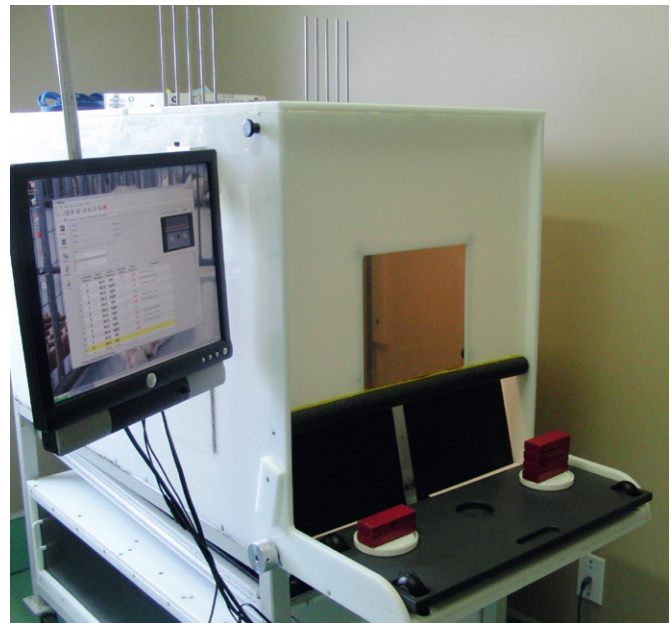


Figure 13.1 Toronto General Test Apparatus. In discrimination learning the dog or cat learns to find food under one of the objects (e.g., the large object), the position of which is randomly presented. When discrimination learning reaches criterion (over 70% success), the dog or cat can then be tested on reversal learning where the food is presented under the opposite (small) object, until the pet reaches criterion. This task is significantly more difficult for senior dogs and cats to learn compared to young adults. (Courtesy of CanCog Technologies.)

learned behavior, as in reversal learning (the dog must learn that the food is now under the opposite object), are also sensitive to age.¹⁸ This may be due to the fact that reversal learning but not discrimination learning in dogs requires the intact function of the prefrontal cortex. This is a brain region in dogs in which the earliest and most consistent neuropathology tends to arise. Memory decline in dogs is also age-dependent. Using memory tasks, such as where the dog is required to recall which object covered the food after gradually longer delays, some aged dogs are unable to remember the location of an object seen 5–10 seconds previously.²² Memory testing reveals three groups of aged dogs: (1) unimpaired; (2) impaired; and (3) severely impaired (Figure 13.5). This is consistent with the findings in the geriatric human population. Laboratory studies have identified altered sleep–wake cycles, increased stereotypy, decreased social contact with humans, and a decreased interest in exploration and play with toys in dogs with cognitive impairment²³ (Figure 13.6).

To date, similar laboratory models in cats have been inconsistent. In one study, deficits in eye blink conditioning, found in Alzheimer's patients, were also demonstrated in a subset of aged cats.²⁴ In a second study, evaluating performance on a hole board task, aging did not appear to affect spatial learning but working memory errors were identified.²⁵ Recently CanCog Technologies (www.cancog.com) has modified the canine test apparatus and protocols for use in cats. Preliminary data demonstrated age differences, with senior cats being impaired relative to normal adults.²⁶ This feline battery should be instrumental in determining the relationship between brain pathology and CDS in cats as well as in the development of therapeutic interventions.

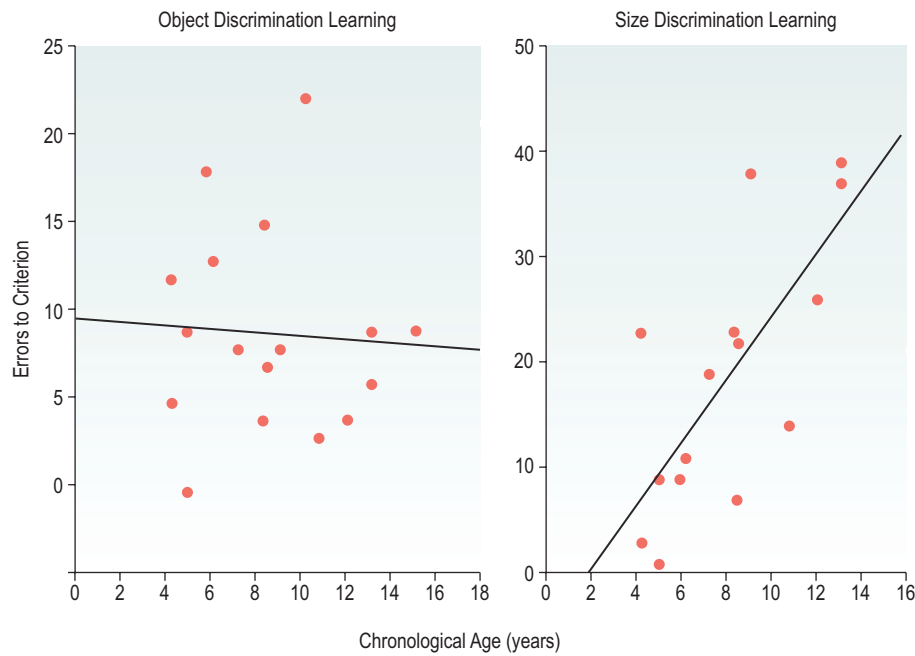


Figure 13.2 Object discrimination learning is not sensitive to age in dogs (correlation between age and error scores on object discrimination is $r = 0.05$). In contrast, size discrimination error scores increase significantly with age (correlation between age and error scores on size discrimination is $r = 0.728$). (Reproduced from Head E, Callahan H, Muggenburg BA, et al. Discrimination learning ability and beta amyloid accumulation in the dog. *Neurobiol Aging* 1998;19:415–425, with permission from Elsevier Science.)

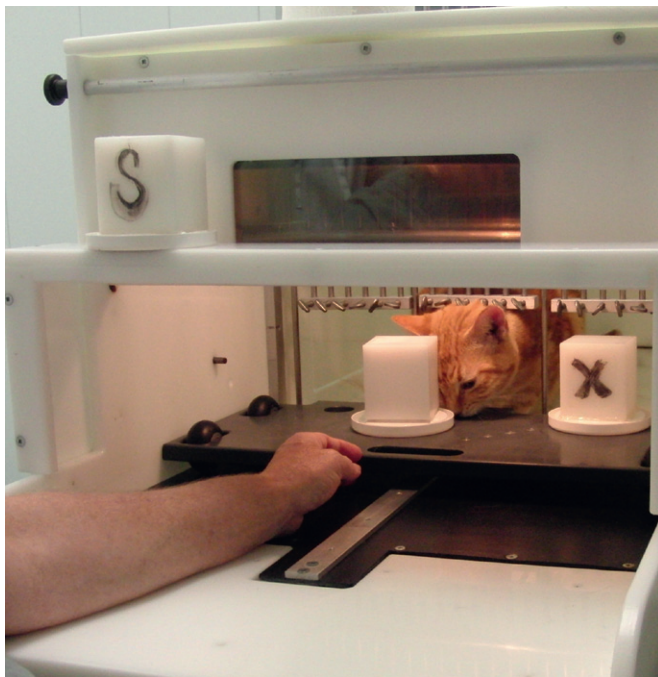


Figure 13.3 Feline testing. Cat being tested on two-choice memory task (delayed nonmatching to position position: DNMP). (Courtesy of CanCog Technologies.)

Based on clinical signs alone, CDS has been traditionally diagnosed in dogs at 11 years and older. However, dogs show impairment in the spatial memory task as early as 6–8 years of age.¹⁹ These functions are highly dependent on the frontal lobe, which shows atrophy and beta-amyloid accumulation prior to other brain areas.¹⁴ In cats, cognitive and motor performance appears to decline starting at approximately



Figure 13.4 Four-choice attention task. Neuropsychological testing. In this task the dog must find the food under the correct (different) object when 0, 1, 2, or 3 incorrect objects (distracters) are presented concurrently. (Courtesy of CanCog Technologies.)

10–11 years of age, but functional change in the neurons of the caudate nucleus has been seen as early as 6–7 years.^{25,27,28}

Clinical signs and diagnosis of cognitive dysfunction syndrome

To diagnose CDS, veterinarians must rely on owner history. Only with careful questioning is it likely that signs would be detectable in the earliest stages of development. The diagnosis was initially based on clinical signs represented by the acronym DISH, representing *disorientation*, altered *interactions* with people or other pets, altered *sleep-wake* cycles, and

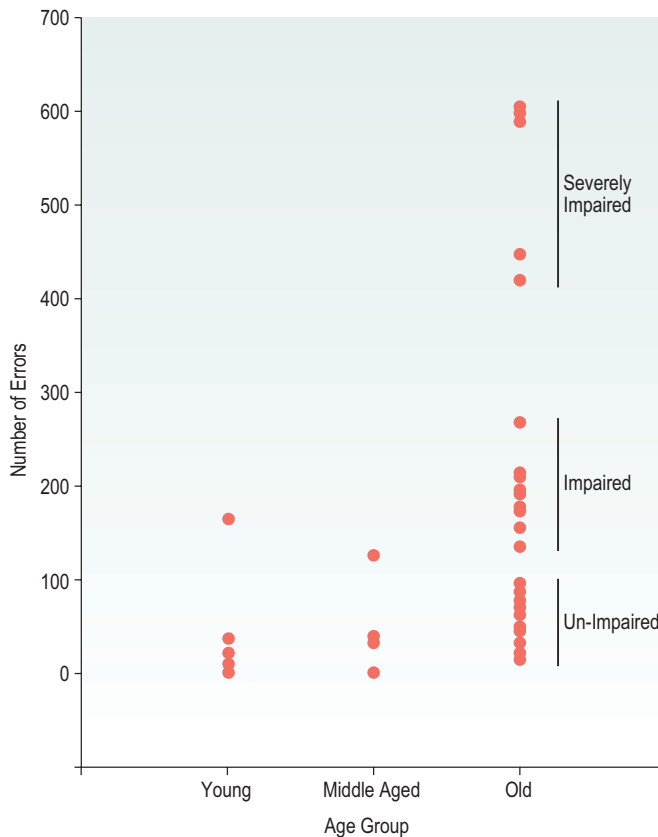


Figure 13.5 Spatial memory is unimpaired, impaired, or severely impaired in three different subsets of aged dogs. (Reproduced from Head E, Milgram NW, Cotman CW. Neurobiological models of aging in the dog and other vertebrate species. In: Hof AP, Mobbs C (eds) Functional neurobiology of aging. Academic Press, San Diego, CA, 2001, pp. 457–468, with permission from Academic Press.)

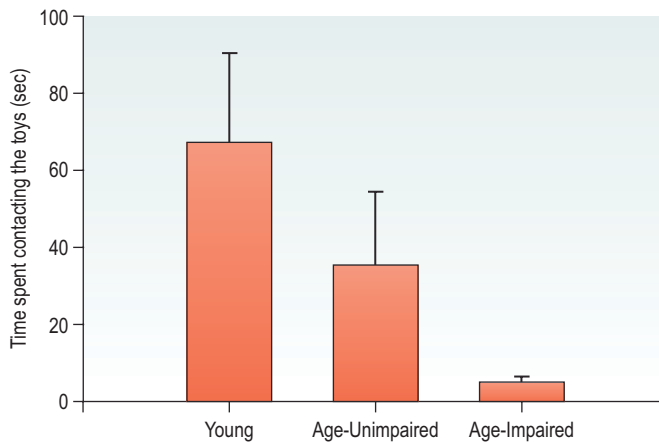


Figure 13.6 The amount of time spent playing or contacting the various toys in the room is plotted against cognitive group. Young dogs play with the toys more than age-impaired ($P < 0.027$) dogs, who rarely touched the toys. Aged, unimpaired dogs explored the toys a little. (Courtesy of Christina T Siwak.)

housesoiling. In addition, since activity may initially decline and over time become restless or repetitive in pets with CDS, an A for *activity* has been added (DISHA). However, one of the earliest signs of CDS, a decline in memory and learning, which is the primary measure for early detection of human Alzheimer's, is unlikely to be identified by pet owners in the absence of laboratory testing, except perhaps for those pets

Box 13.1 Signs of cognitive dysfunction syndrome

- Confusion
- Altered relationships and social interactions
- Altered response to stimuli
- Changes in activity: increased anxiety, pacing, repetitive behaviors (vocalizing, pacing)
- Changes in activity: apathy, depression
- Altered sleep–wake cycles; reversed day/night schedule
- Learning and memory problems: housesoiling
- Learning and memory problems: deficits in work, tasks, and commands

Box 13.2 Components of the diagnostic workup for senior pets with behavioral signs

1. Medical history to determine if there are any concurrent medical signs
2. Evaluate drugs, supplements (including over-the-counter products) and diet that might affect behavior
3. Physical examination, palpation for signs of pain, evaluation of gait and mobility
4. Neurological examination, sensory evaluation and, if indicated, additional tests including ophthalmic exam, brainstem auditory evoked response, and brain imaging (computed tomography, magnetic resonance imaging)
5. Laboratory tests, including complete blood count, biochemical profile, and urinalysis; blood pressure where indicated
6. Viral testing (e.g., feline immunodeficiency virus, feline leukemia virus) and endocrine function testing where indicated (e.g., thyroid, adrenal)
7. Behavioral history to determine if any environmental changes may have incited the signs
8. Evaluation of behavioral signs

that are trained to a higher level of performance. On the other hand, the additional mental enrichment these working pets receive might theoretically slow the decline (see treatment of cognitive dysfunction, below). In addition, based on owner-reported behavior concerns in senior pets, anxiety appears to be associated with brain aging and cognitive decline in dogs and cats and this is analogous to the anxiety, troubled sleep, and agitation often associated with diseases causing cognitive decline and frontal-lobe dysfunction in humans^{29,30} (Box 13.1).

Standardized scales for screening and diagnosing cognitive dysfunction are still under development. One screening tool (Figure 13.4) offers a method for veterinarians to assess whether any of the signs have developed since the previous visit. This should immediately prompt further questions to determine if there are any other concurrent signs that might be consistent with an underlying medical problem, a comprehensive medical evaluation, and a behavioral history to rule out any changes in the pet's schedule or household that may have caused or contributed to the signs (Box 13.2). If a diagnosis of cognitive dysfunction is made, the role of diet, enrichment, supplements, and drugs can be discussed and a therapeutic response trial initiated. Alternately, if signs are subtle, reassessment should be scheduled in 6 months since cognitive dysfunction is likely to progress in the number, frequency, or intensity of signs over 6–12 months.^{2,8,10} Other

scales that have been developed to measure cognitive dysfunction are the 13-trait scoring system developed by Salvin et al, and the Age-Related Cognitive and Affective Disorder (ARCAD) scale developed in France³¹ (see Chapter 22).

Aging and its effect on the brain

In dogs, advancing age is associated with frontal volume decreases and ventricular size increases and there is evidence of meningeal calcification, demyelination, increased lipofuscin and apoptotic bodies, neuroaxonal degeneration, and a reduction in neurons^{15,16} (Figure 13.7). Using magnetic resonance spectroscopy, preliminary studies have demonstrated an age-related decline in markers of neuronal health in both

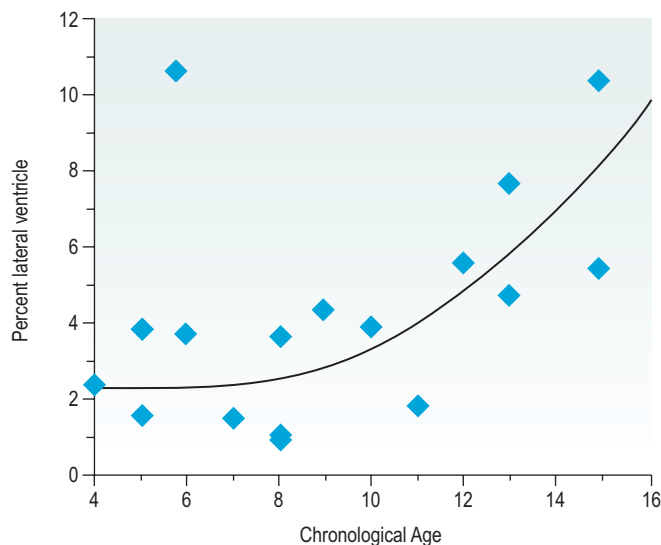


Figure 13.7 The plot of percentage lateral ventricle volume (normalized by the total cerebral volume) with age. The relationship with age was not linear; rather it was stable before age 10 and progressed very rapidly thereafter. A 6-year-old dog was obviously falling out of the age dependence trend, and was marked as an outlier. Excluding the outlier, the age correlation was significant. The solid curve is for visual guidance. (Reproduced from Su M-Y, Head E, Brooks W, et al. Imaging of anatomic and vascular characteristics in a canine model of human aging. *Neurobiol Aging* 1998;19:479–485, with permission from Elsevier Science.)

dogs and cats^{32,33} (Figure 13.8). There is also evidence of age-associated brain pathology in cats, including neuronal loss, increased ventricular size, cerebral atrophy, and widening of the sulci, although perhaps not as marked as seen in dogs.^{11,34,35} Perivascular changes, including microhemorrhage or infarcts in periventricular vessels, have been reported in senior dogs and cats. Arteriosclerosis of the nonlipid variety may also be seen in the older dog and cat as a result of fibrosis of vessel walls, endothelial proliferation, mineralization, and beta-amyloid deposition. This angiopathy may compromise cerebrovascular blood flow, which may be responsible for some of the signs of cognitive dysfunction.^{11–16,36}

Functional changes that may occur in the aging brain include a possible depletion of catecholamines and an increase in monoamine oxidase B (MAOB) activity in dogs.³⁷ A decline in the cholinergic system function has also been identified in dogs and cats, and this may contribute to cognitive decline and possibly motor function, as well as alterations in rapid-eye-movement (REM) sleep.^{34,38–41} In dogs, cats, and humans there is an accumulation of diffuse beta-amyloid plaques and perivascular infiltrates which increases with age.^{11–14} Beta-amyloid can be detected as early as 7 years of age in dogs and 10 years in cats, and both the quantity and frequency of distribution increase with age.⁴² In both dogs and cats, the deposits appear in the cerebral cortex and hippocampus, and in the meningeal vessel walls of dogs, but not cats. Dogs display strikingly similar A β pathology to that seen in Alzheimer's patients.^{12,43} Furthermore, increased A β plaques are positively correlated with cognitive impairment in dogs^{13,14,43} (Figure 13.9). Genetics may be a contributing factor in the extent of amyloid distribution, as some breeds develop beta-amyloid at an earlier age and there is high concordance within litters in the extent of beta-amyloid.⁴⁴ Diffuse A β plaques and perivascular infiltrates are also present in the brains of cats 10 years and older and have been reported to appear in cats as young as 7.5 years of age.⁴⁵ Compared to humans and dogs, plaques are more diffuse, although senile plaques that are morphologically similar to dogs have been reported.^{12,36,42,46,47} However, the link between CDS and A β pathology in the cat is inconsistent, as some studies demonstrated a positive link,^{12,46} while others show no correlation.⁴⁷ The most striking difference from humans

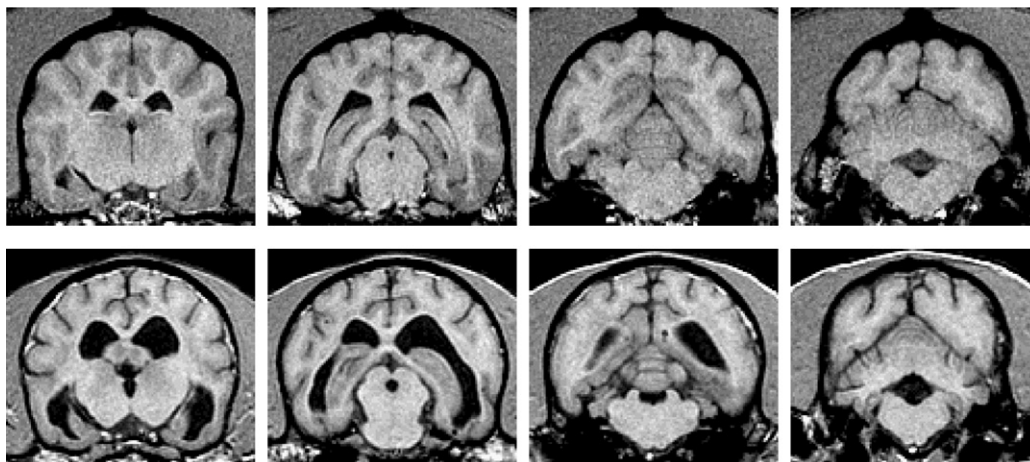


Figure 13.8 Selected magnetic resonance images from a 2-year-old (above) and a 15-year-old (below) dog. The old dog showed marked ventricular enlargement and cortical atrophy (deep gyri and widened sulci). (Courtesy of L M-Y Su.)

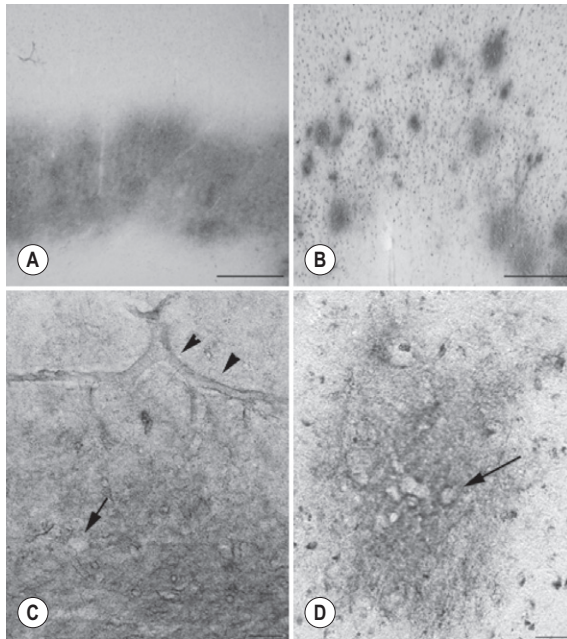


Figure 13.9 Diffuse A β deposition in the parietal cortex of (A) an aged cat with symptoms of cognitive dysfunction syndrome (tissue provided by Dr. Kelly Moffat) versus (B) in the aged canine brain. Note that A β in the cat is present as a large diffuse cloud whereas, in the dog, more discrete deposits form. Higher magnification of A β in (C) cats and (D) dogs. Note the A β deposition associated with blood vessels (arrowheads) in the cat and that, in both animals, intact neurons (arrows) are present within diffuse clouds of A β . Bars in A and B: 500 μ m; C and D: 50 μ m. (Courtesy of Dr E. Head.)

is the absence of neurofibrillary tangles in dogs and cats, although hyperphosphorylated tau is reported and may represent pre-tangle pathology.^{11,46,48,49}

With increasing age there is also an increase in reactive oxygen species, leading to oxidative damage in dogs, which is speculated also to be a factor in aging cats.^{11,50,51} Normally the body's antioxidant defenses, including enzymes such as superoxide dismutase, catalase, and glutathione peroxidase, and free radical scavengers such as vitamins A, C, and E, eliminate free radicals as they are produced. With age, an increased production and decreased clearance of free radicals can lead to a net increase that may react with DNA, lipids, and proteins, leading to cellular damage, dysfunction, and even cell death. The brain is particularly susceptible to the effects of free radicals because it has high lipid content, a high demand for oxygen, and limited ability for antioxidant defense and repair. Diets rich in antioxidants and mitochondrial cofactors have been shown to improve learning and memory in senior dogs.^{20,21}

Brain glucose metabolism may also be compromised with increasing age.⁵² Recent studies have shown that dietary supplementation with medium-chain triglycerides (MCTs) which are converted in the liver to a ketone body, beta-hydroxybutyrate, can provide the brain with an alternative source of energy that improves executive function, learning, and memory in senior dogs.⁵³

Diagnosis of behavior problems in senior pets

When senior pets are presented with behavior problems (Tables 13.1 and 13.2), "Why now?" is one of the first

Box 13.3 Medical problems affecting behavior in senior pets (for a more comprehensive list of health issues and their effects on behavior, see Table 6.1)

- Neurological (central, cognitive dysfunction syndrome, peripheral)
- Cardiovascular/respiratory
- Neuromuscular/musculoskeletal
- Sensory dysfunction (e.g., hearing, sight)
- Metabolic/degenerative disorders (e.g., hepatic, renal)
- Urogenital/gastrointestinal
- Endocrine disorders (e.g., thyroid, adrenal, pancreas, gonadal)
- Dermatologic (e.g., pruritus, otitis, anal sacculitis, intertrigo)
- Infection/inflammation (e.g., prostatitis, cystitis)
- Pain and discomfort (e.g., dental, degenerative arthritis, neuropathy)
- Neoplasia

questions to consider. This can help the practitioner to focus on what might have changed in the pet's health or environment that could have caused or contributed to the problem. In some cases, the owners are seeking help for a problem that has been longstanding but has recently become less tolerable. This may be due to changes in the home such as the vocal dog that is now a greater concern because of owner health issues, new neighbors, or new family members (e.g., spouse, new baby). In some cases, a pre-existing problem may have significantly increased in intensity or frequency to become a serious concern for the pet or owner, such as a fear of noises that progresses to a severe storm aversion or phobia. This may be further aggravated by underlying health issues such as a decline in vision or hearing. Since senior pets may be more resistant to change, alterations in the pet's schedule or environment may be particularly stressful. Therefore, while the behavioral history is a critical component of the diagnostic workup for behavior problems in pets of any age, the first consideration when behavior problems arise in senior pets is whether there are any emerging health issues that might be causing or contributing to the problem. In fact, since senior pets are likely to develop an increasing number of health issues with advancing age (Box 13.3), it can be particularly difficult to determine what role, if any, the pet's medical health is having on its behavior.

Anxiety, fears, and phobias

Increasing anxiety is a relatively common complaint of owners of older pets. Increasing sensitivity to stimuli, increasing fear of unfamiliar pets and unfamiliar people, increased irritability, decreased tolerance of handling and restraint, increased following and desire for contact, and increasing anxiety during owner departures are some of the more common family concerns. While excessive reactivity to noise and thunderstorms appears to be the most common phobias of older dogs, other less common presentations might include fear of the outdoors, or fear of entering certain rooms or walking on certain surfaces. The initiating event may have been a particularly fearful or uncomfortable experience but may have gone unnoticed by the owners.

Medical problems that affect the CNS, including cognitive dysfunction and other age-related brain pathology, decreased

sensory acuity, endocrinopathies, and painful conditions such as arthritis and dental disease, must be ruled out. Noise sensitivity, perhaps related to hearing loss, may lead to increased anxiety and vocalization in some dogs. The locus ceruleus and its neurotransmitter norepinephrine are vital in the genesis of fear and panic, so that age-related changes that affect the limbic system, the locus ceruleus, and norepinephrine transmission can either aggravate or reduce fearful and phobic responses. The history may indicate that these pets have previously had less intense fears but that, with repetition over the years (and perhaps medical contributing factors), the problem may have intensified (e.g., storm phobias). The owner's response to the pet may further compound the problem, either by inadvertently reinforcing the behavior (giving attention or treats to try to calm the pet) or aggravating the anxiety (e.g., by responding with anger, frustration, or punishment). Thus many of these problems are likely to be multifactorial with medical, environmental, and owner influences.

Although signs of separation anxiety in the senior dog are virtually the same as in younger dogs (e.g., hyperattachment when the owners are home, anxiety exhibited as destructiveness, vocalization, or autonomic signs such as salivation or elimination during departure) the problem is acquired rather than developmental. Separation anxiety may be comorbid with other fears and phobias, or may be related to a recent change to the household, schedule, or social partners (family members, other pets).⁵⁴ Senior pets may have greater difficulty adapting to change, and health issues can further contribute to the problem. As the pet's anxiety and insecurities increase, the pet may seek out the owner's attention. If the owners try to calm the pet by giving attention (rather than encouraging the pet to spend time on its own), the problem may be further reinforced and the pet unable to cope when the owner is not home or accessible. Crating or confining the pet to prevent further damage or soiling may further add to the pet's anxiety if the dog has not been sufficiently accustomed to confinement. In these cases the confinement plus the owner's departure both contribute to the pet's anxiety. The history, physical assessment, and findings of diagnostic testing as well as video recording or web monitoring of the pet's behavior during departures are useful in making a diagnosis and developing a treatment plan. One of the most important factors in the history is whether the pet exhibits any of the signs when the owner is at home. If this is the case, a cause other than separation anxiety should first be considered.

Increased fear and anxiety in cats can lead to avoidance behaviors, vocalization, soiling, or redirected aggression. Novel noises or odors can increase fear and anxiety. In most cases, a medical cause such as pain, sensory decline, cognitive dysfunction, or other age-related brain pathology are likely contributing factors since behavioral signs are often the first or only indication that a cat has a health problem. The history should evaluate all medical and behavioral signs, combined with physical examination and diagnostic tests as well as any changes or alterations to the pet's lifestyle or household. Cats, especially senior cats and those with medical problems, can be particularly sensitive to the effects of change. Owner responses can further aggravate the situation since alterations in the owner's response to the cat or adjustments to the environment to deal with the problem

can further add to the cat's stress. Improvement can best be achieved by providing a predictable environment, predictable consequences, and reinforcement-based techniques to increase desirable behaviors while ignoring or preventing undesirable behaviors.

Excessive vocalization

In cats and dogs, vocalization can become a problem if it becomes excessive and uncontrollable, or occurs at undesirable times (e.g., when the family is sleeping). Sensory dysfunction (particularly auditory dysfunction), age-related cognitive dysfunction, CNS pathology, and pain- and age-related medical conditions may contribute to increased anxiety, noise sensitivity, and vocalization. Hearing loss may lead to an inability of the pet to audit its own vocalization level or volume. Distress vocalization when the family is absent may be due to separation anxiety. If excessive vocalization occurs when the family is at home, then the history will need to be evaluated to determine when and under what circumstances the dog or cat vocalizes. Cats and dogs with polyphagia may vocalize in an attempt to acquire food, which is reinforced if the owners acquiesce. Dogs might vocalize to signal owners if they have an increased need to eliminate. They also might begin to vocalize in response to specific stimuli (noises, visitors) as their senses decline and with cognitive dysfunction. In addition, vocalization is particularly problematic if it wakes the owners at night (see below). Owner attempts to quiet the pet may reward the behavior (if the owner gives attention or uses treats or toys to quiet the dog) or increase the anxiety (by responding with anger, frustration, or punishment). Treatment and control of barking are covered in [Chapter 14](#) and excessive vocalization in cats in [Chapter 15](#).

Housoiling

Housoiling in dogs and cats may be indicative of a wide range of medical problems that can affect the older pet. Sensory decline, painful neurological or neuromuscular conditions that affect mobility, age-related cognitive dysfunction, other forms of CNS pathology, any medical condition that might affect behavior (e.g., endocrinopathies, hepatic encephalopathy), and medical conditions that increase the volume or frequency of elimination, discomfort during elimination, or a decrease in control may all be contributing factors. In cats, litter avoidance may arise from medical problems that make accessing the litterbox difficult, uncomfortable, or more frightening (e.g., sensory decline, arthritis, obesity). Pets with disease conditions that affect the CNS (e.g., brain tumors, cognitive dysfunction) may begin to eliminate in the home, often in more random locations. This is more likely to be a sign of advanced cognitive dysfunction in dogs than in cats, since there are numerous learned components to the behavioral sequence, including: (1) voluntary control of elimination when the pet feels the urge; (2) signaling the family to be taken outdoors to eliminate; (3) seeking out the appropriate location; (4) responding to an elimination command (if trained in this manner); and (5) voluntarily voiding at the appropriate site.

Housoiling in dogs that occurs only when the dog has no access to the owner may be a result of separation anxiety,

but would usually be accompanied by destructive behaviors, distress vocalization, or other signs of anxiety. However, separation anxiety is not the only reason that a pet would soil only when the owner is away from home. Some pets will not soil as long as the owners are available to take the dog outdoors to eliminate or change the litter sufficiently frequently for cats. Many dogs learn to inhibit indoor elimination when the owner is present or signal their owners when they require access to the outdoors. Since senior pets are more resistant and less able to adapt to change, any alteration in the pet's schedule or environment may contribute to soiling. Anxiety and conflict could contribute to urine marking behavior.

Whether the cause is medical or behavioral, once the pet begins to use new indoor locations regularly, even with sufficient cleaning the pet is likely to return to the site, since it has learned a new indoor location that has convenient access and where there are no untoward consequences during elimination. Elimination is also a self-reinforcing behavior. Therefore, in addition to the medical assessment and diagnostics, the history is an essential component in making a diagnosis as well as formulating a treatment plan. This would include determining the distribution (random or specific locations), frequency, and location of elimination (hidden locations or near exit doors), whether the pet eliminates when the owner is home or absent, any changes in the schedule or household at the time of onset, other concurrent changes in health or behavior, including mobility, sensory loss, or incontinence, and what the family has done to date to try and improve the behavior, and the pet's response to each. While the treatment program is essentially the same for any housesoiling problem (see [Chapters 18 and 19](#)), there may be limitations on what can be achieved in the senior pet if its health problems or cognitive dysfunction cannot be entirely resolved. For example, dogs with polyuria may need more frequent access to elimination areas, or an indoor litter location might be required, while cats may require more frequently cleaned litterboxes, bigger boxes, or more boxes. Pets with mobility and sensory issues may need help accessing their elimination area, better lighting, or environmental modifications to improve accessibility, including an easier access to the outdoors or ramps for dogs, lower sides or a ramp for entry to litterboxes for cats, a much larger litterbox, or a new site for the litterbox. Incontinence issues may require the use of diapers or confinement on surfaces with absorbable material (provided it is not ingested by the pet) if medication cannot be found to improve the problem.

Compulsive and stereotypic behaviors

Compulsive and stereotypic behaviors encompass a wide spectrum of behaviors with numerous causative factors. Conflict, stress, or anxiety-producing stimuli or situations may lead to displacement and redirected behavior, which over time might become compulsive. Owner responses may further reinforce or aggravate the problem. Medical conditions, cognitive dysfunction, sensory decline and other related brain pathology and alterations in neurotransmitters may cause or contribute to the problem in the aging pet. Repetitive pacing and aimless wandering are commonly reported in pets with cognitive dysfunction. Many oral behaviors seen in senior pets, including pica, licking,

sucking, or chewing of household objects, may be due to medical conditions that cause polyphagia or gastrointestinal upset (see [Chapters 6 and 11](#)).

Aggression

Aggression may also arise in the older pet, although it is more commonly reported earlier in life as the pet grows and matures. Medical conditions affecting appetite, mobility, cognition, sensory function, or hormonal status, and conditions leading to increased pain or irritability might contribute to an increase in aggression. Aggression to family members may arise from medical problems contributing to pain and irritability, changes in family makeup such as the birth of a new baby or marriage, or other changes in the schedule or household that lead to anxiety or conflict. Aggression to other family pets might arise from the introduction or maturation of a younger pet, or age-related changes in the older pet that alter the way in which the pet responds to, or interacts with, the other family pets. Increased aggression toward unfamiliar animals and people may result from increasing anxiety and altered sensitivity to stimuli with age. In addition, health and cognitive status may cause or influence aggression.

Restlessness/waking at nights

Dogs and cats that are restless or do not sleep through the night can be particularly serious for pet owners both because of the pet owner's loss of sleep as well as the owner's concern for the pet's health and welfare. The pet should first be closely evaluated for any medical problems that might lead to an increased frequency of elimination, restlessness, or discomfort. Sensory changes can affect the pet's depth of sleep. With age there may also be altered sleep-wake cycles and decreased REM sleep, which may be a component of cognitive dysfunction or other forms of CNS pathology. Pets that sleep more during the day and evening hours may be more awake through the night. In dogs, an altered response to environmental stimuli, such as paper delivery or a garage door opening, may trigger nocturnal activity and vocalization. Keeping a diary may be helpful for identifying that type of problem.

Treatment of common behavior problems in senior pets

As with behavior problems in pets of any age, the diagnosis is based on: (1) history, physical examination, and diagnostic tests to rule out possible medical causes or contributing factors; and (2) behavioral history to determine the role of the pet, the owners, the environment, and details about the onset, progress, and consequences of the problem itself (see [Chapters 5 and 6](#)). Once a diagnosis is made treatment can proceed as discussed in the sections throughout this book on stereotypic behaviors ([Chapter 11](#)), fears, phobias, and anxiety ([Chapter 12](#)), unruly behaviors such as barking and feline vocalization ([Chapters 14 and 15](#)), housesoiling ([Chapters 18 and 19](#)) and aggression ([Chapters 20 and 21](#)). However, since medical problems may be chronic or recurrent in the senior pet, there may be limitations to the

improvement that can be realistically achieved and modifications may have to be made to the environment or schedule to cope with the problems satisfactorily. Health problems such as sensory decline or cognitive dysfunction may limit the ability of the pet to communicate with people and other pets, or alter the pet's mobility, which can significantly impede the pet's ability to learn the behaviors needed to make improvement. Honest and frank discussion with the family is essential to ensure that they have realistic expectations about what might be achieved both in the short term and over time. At some point, the conversation will need to turn to quality of life, hospice care, and end-of-life issues. These topics are beyond the scope of this text but can be found elsewhere.⁵⁵

The most common behavior problems in senior pets are generally related to the increased prevalence of fears, anxieties, phobias, housesoiling, aggression, and nighttime disturbances. Both aggression and nighttime disturbances might require some specific considerations for senior pets and are discussed below. In addition, both aggression and night waking can be particularly problematic for both the pet and the safety, health, and welfare of the owner. Pets that disrupt the owner's sleep will impact on the owner's health and well-being as well as the bond with the pet. In some cases, the owner's frustration and concern are just as much for their pet's well-being as their own. Unfortunately, once established, these problems can be difficult to improve if there are ongoing health concerns (e.g., renal, pain and discomfort such as from degenerative joint disease or neoplasia, sensory loss, cognitive dysfunction, degenerative myelopathy, or the side-effects of medications such as steroids). In addition, even if the health issues can be controlled or resolved, once the pet's sleep cycles are altered or the pet has learned that aggression can successfully achieve its goal, it may require a concerted effort to resolve the problems. This might involve using a combination of environmental management, behavior modification, behavior medication, as well as medical treatment of health problems and cognitive dysfunction.

Aggression

The contribution of medical problems (including pain) and cognitive dysfunction to the development and perpetuation of aggression may be difficult to assess until treatment has been implemented and any improvement can be evaluated. Medical problems that cannot be entirely resolved, such as a decline in sensory function, may have a more guarded prognosis. Management and prevention by identifying and avoiding situations that trigger aggression may be the best option. This can also be in the best interests of the pet which clearly does not want to engage in the interactions. If there is a component of anxiety or behavioral dyscontrol, drugs that reduce anxiety or improve serotonergic transmission may prove to be helpful (see adjunctive pharmacologic and natural therapeutics, below). However, senior pets may be more sensitive to drugs with anticholinergic or sedating effects; in addition, potential contraindications when using more than one drug must be considered. Drug disinhibition, such as with anxiolytics, could cause an increase in aggression in situations in which the pet might otherwise have avoided the interaction. Combining selective serotonin reuptake inhibitors (SSRIs) or tricyclic antidepressants with

selegiline is contraindicated; drugs such as tramadol, S-adenosyl-L-methionine (SAME), tryptophan, or buspirone might contribute to serotonin increases and potential toxicity, especially if high doses or multiple drugs are used in combination. Effects of SSRIs on CYP450 enzyme systems should also be considered if multiple drugs are being used in combination (Figure 6.6).

Aggression cannot be effectively treated until a proper diagnosis is made and the cause of the aggression has been determined. When there are no significant changes in the household or the pet's management that are likely to have contributed to the problem, it is most likely that an underlying medical problem is a contributory factor leading to irritable aggression, pain-induced aggression, altered perception of stimuli such as with sensory decline, alterations in mobility (thus inhibiting retreat from a stimulus), or an alteration in the way a pet responds to stimuli at the cortical level due to disease or cognitive dysfunction. When aggression is displayed and the stimulus for the aggression stops or backs away, the behavior is likely to increase since the pet is negatively reinforced. Attempts at punishing the pet are likely to increase fear, anxiety, and defensive aggression. Treatment requires a combination of identifying and avoiding triggers for aggression (e.g., keeping the pet away from potential problems, avoiding the situations that incite aggression), associating positive outcomes with aggression-eliciting stimuli (counterconditioning), teaching new behavioral responses (response substitution) and, possibly, medication to treat the underlying medical issues or treat the behavior. Issues may begin to arise with unfamiliar people, in which case interactions with new people should be avoided by housing the pet in a comfortable room away from visitors, or by using a leash and head halter in dogs for safer and more effective control.

As the family dog or cat gets older, social problems with other pets may occur. The introduction of a new pet may lead to increased anxiety because of the alterations in the attention, play, or exercise the pet receives, or due to competition over resources. In most dogs, if the existing pet is sufficiently healthy and has had adequate socialization, problems can usually be prevented with controlled introductions. In fact, the new pet might add valuable social companionship and enrichment for the senior dog, while a young dog can benefit from the social interactions and observational learning of the senior pet. However, if the elderly dog has medical problems, has been inadequately socialized to other pets, or is fearful or anxious about meeting unfamiliar dogs, introduction of a new pet should be avoided or the introductions will need to be done very gradually and positively while avoiding as much disruption as possible to the senior pet's home or lifestyle. If an older dog becomes fearful or aggressive when a new puppy is introduced, the dogs should be separated whenever someone is not around to supervise. The family may at first have to provide play, exercise, and training with each dog independently. In some cases, the dogs may engage successfully in positive activities such as reward training, walks, and play but become aggressive over owner attention and resources in the home. Improving the relationship will require counterconditioning the senior dog with high-level rewards while reward training the young dog to behave appropriately during greetings and interactions.

A leash and head halter can help ensure desirable outcomes while preventing undesirable behavior. When the dogs can successfully play together, verbal praise should be used, and the play intermittently stopped and rewards given to both dogs before problems arise. Initially, a basket muzzle might also be needed for one or both dogs to ensure safety when the dogs cannot be separated. If the family can achieve and reinforce successful outcomes when the dogs interact, it should be possible to shape a healthy social relationship successfully.

Sometimes, aggression develops between two adult dogs that have lived together for years when a stable relationship is upset by alterations in the way that dogs are able to communicate or interact. Along with the cognitive changes, sensory decline, pain, mobility, and other health issues that arise in geriatric pets, visual, odor, and auditory communication (the principal methods in which the dogs communicate) may be altered by changes in the way that the aged dog receives and responds to signals. Pain, irritability, or altered cognition may also contribute to failing social relationships and an increase in aggression. Once threats or aggression are displayed, learning and consequences can lead to a further deterioration in the relationship. Owner responses (e.g., to protect one dog or punish the offender) may also increase the pet's anxiety or interfere with the ability of the pets to learn new strategies to avoid aggression. Identifying the circumstances and locations in which problems arise may help owners to develop preventive strategies, while head halters and muzzles can be added for safety and control. If the senior pet is physically and mentally capable, it should be possible to use response substitution and counterconditioning to help reduce anxiety and teach new behaviors that are acceptable to both pets. Even if some degree of separation is required, continuing to engage in enjoyable shared activities in which the pets show no fear or anxiety (e.g., walks, play sessions, reward training) can help to maintain positive social relationships.

The main social problem between cats occurs when another cat is introduced into the home.

Separating the new cat into a room of its own, and slow and gradual introduction with counterconditioning may be successful (see [Chapter 21](#)), but the prognosis can be guarded for achieving success since the genetics, sociability, previous experience, environment, or health of the senior cat may preclude the development of a healthy social relationship with other cats. If the new cat is an adult that is social and calm around other cats, or perhaps a social young kitten (7–9 weeks), there may be a more successful long-term outcome but introductions will still need to be gradual. Another issue is that medical problems and cognitive decline could contribute to a breakdown in the social relationships between existing cats. Treatment of underlying medical problems, desensitization, counterconditioning, drug therapy, and Feliway may be effective but it can be difficult to re-establish a healthy social relationship between an aging cat and other cats in the home once it has been altered.

Restlessness/waking at night

Some of the more common contributing factors for night waking in dogs and cats include CDS and other neurological diseases, pain, an increased need to eliminate, sensory

decline, hypertension, and the behavioral effects of drugs. While many medical problems cannot be resolved in senior pets and the cause of altered sleep cycles might be difficult to identify, the family may still require a resolution to the problem for the health and welfare of both the pet as well as themselves. Further compounding the problem is that, even if the underlying cause can be identified and controlled or resolved, once the pet's sleep cycle is altered, it will often require a combination of medical and behavioral approaches to re-establish an acceptable day–night sleep–wake cycle or to manage the problem successfully.

Some pets may have difficulty settling and falling asleep; others may fall asleep normally but wake multiple times a night, while some pets may be unable to settle through the entire night. It is also important to review the entire behavioral history, including the pet's activity level during the daytime since some pets may have no appreciable decline in daytime activity, while others can display unsettled and repetitive daytime activity or excessive sleep, low activity levels, a decreased desire for play and social interactions and what might be described as “apathy.” Since cats tend to be more active at night or especially around dawn, it is important to determine if the nighttime waking is a change from previous sleep patterns. If the night waking is accompanied by increased activity with aimless wandering and repetitive behaviors, decreased response to stimuli, altered social interactions with owners, or an overall decline in play and activity, these signs are consistent with cognitive dysfunction (provided other medical causes are ruled out). Cats and dogs may wake more frequently at night if there is an increase in nighttime activities (e.g., noise, other animals) outside the home. Noise sensitivities may be more pronounced at night, presumably due to reduced ambient noise, which may lead to nighttime waking even if the stimulus is not audible to the family.

In addition to ruling out all possible health issues, the history should focus on the pet's daily routine, the pattern of nighttime waking, and any other changes in health or behavior. Basic recommendations begin with an attempt to increase predictability and enrichment during the daytime hours. Exposure to fresh air and ambient light may help to reduce anxiety and improve cognition and nighttime sleep. When health problems or cognitive decline limit the pet's daytime activity, the owners should find alternate forms of play and enrichment (see treatment of cognitive dysfunction, below). At bedtime, helping the dog to settle with reward training, massage, gentle petting, or perhaps with the aid of a head halter may help calm dogs that cannot fall asleep because of agitation or arousal. Reducing ambient noises using white-noise devices (assuming they do not interfere with sleep) and keeping on a night light might help some pets. Finding and reinforcing the use of a bedding location or surface where the pet is most comfortable can be helpful. Most pets benefit from having a specific resting area where they would prefer to sleep; this may be in a crate or dog bed, and/or in a family member's bedroom. A heated bed or memory foam padding may be attractive to some pets and ease pain or discomfort. A tether for dogs or simply closing the bedroom door may prevent the pet from wandering at night. The preferred location for some pets may be in another room away from family members. By closing off the doors or using a crate at night, this can prevent wandering and

perhaps allow the family to ignore behaviors rather than attend to the pet (which may reinforce nighttime behaviors). Throughout the day the owners should ignore any attention-seeking behaviors and reinforce calm or quiet behaviors in all interactions with the pet. Reward training should focus on calming or settling the pet with gradually longer and more relaxed downs at the owner's feet or in the dog's bed before rewards are given. Clicker training or training with a Manners Minder (which can remotely deliver treats at the pet's resting site) can help more immediately reward and shape desired behaviors. Another option for some cats that wake early is to provide feeding toys or timed feeders in this room so that the pet can occupy itself without gaining owner attention.

Advise families that punishment or scolding can contribute to the pet's anxiety or possibly reinforce the behavior by giving attention. Similarly, feeding, petting, taking the pet outdoors, or allowing the pet on the bed may also reinforce attention-seeking behaviors. Sometimes, products such as a head halter, comfort wraps (Anxiety Wrap or Thundershirt) or products reducing ambient noise (Mutt Muffs or Thunderbands) may reduce anxiety as well as the stimuli that incite waking.

When nighttime waking is related to cognitive dysfunction, treatment with drugs and products for CDS and increased environmental enrichment in conjunction with the behavioral techniques discussed above may markedly improve the problem. When anxiety is a component, a pheromone collar or diffuser in the sleeping area, natural supplements (Anxitane, HarmonEase, alpha-casein, aromatherapy with lavender or chamomile essential oils, melatonin, valerian) prior to bedtime might help to calm the pet. Some medications, such as diphenhydramine, phenobarbital, or trazodone, may provide useful sedation if dosed prior to bedtime. For the dog or cat that has difficulty settling at night but then sleeps well, situational use of anxiolytics which may promote sleep may be beneficial as adjunctive therapy to behavior modification. Benzodiazepines may be useful due to their rapid onset and short-acting anxiolytic and sedative effects, but paradoxical excitement may be seen in some pets, especially at higher doses. In senior pets, especially where liver function might be compromised, clonazepam, lorazepam, or oxazepam might be preferable to alprazolam or diazepam since they have no active intermediate metabolites. Since pain may contribute to unsettled sleep or night waking, consider pain management products. Gabapentin might be a consideration both as an adjunctive therapy for pain management as well as for its behavioral calming effects. For senior pets with generalized anxiety, noise phobias, or separation anxiety that is not restricted to nighttime anxiety, consider drugs with fewer side-effects, such as buspirone and SSRIs such as fluoxetine and sertraline (SSRIs are not effective for situational problems and typically must be given for 2–4 weeks before effects are noted). In humans mirtazapine has also been used as a supplement to SSRIs for patients with insomnia.

Treatment of cognitive dysfunction

When cognition is impaired, diet, drugs, or supplements might be useful in improving signs, slowing the progress of CDS, and making pets more amenable to behavioral

management. Canine studies have also shown that mental stimulation is an essential component in maintaining quality of life and that continued enrichment in the form of training, play, exercise, and novel toys can help to maintain cognitive function (i.e., use it or lose it).⁵⁶ Maintaining a regular, predictable daily routine and providing the pet with control to engage in pleasant interactions, and avoid unpleasant ones, may help to reduce stress and anxiety, improve cognitive function and quality of life, and maintain temporal orientation.⁵⁷ This is analogous to recent human studies in which education, brain exercise, and physical exercise have been found to delay the onset of dementia. However, excessive change can be stressful, especially to the senior pet, so that any change in the household or routine should be gradual. Inconsistency and lack of control can cause stress and negatively impact health and behavioral well-being.

Since medical problems may reduce the pet's ability or interest in engaging in some forms of enrichment, owners should find alternative activities (e.g., short walks, tug toys, find-and-seek, reward training) and new forms of object play (e.g., food manipulation toys, chew toys, hanging feeding toys for cats) that are within the pet's physical and mental capabilities (Figures 13.10 and 13.11). As sensory acuity, sensory processing, and cognitive function decline, adding new odor, tactile, and sound cues might help the pet better navigate its environment and maintain some degree of environmental familiarity and comfort.

Additional modifications may be required if mobility is affected or urinary frequency or control becomes an issue. Dogs may require more frequent trips outdoors, a dog walker, or an indoor elimination area if they have medical conditions leading to polyuria or incontinence. Ramps and physical support may be required for pets with mobility issues. More litterboxes, larger boxes, or more frequent cleaning may be required for cats with polyuria. Ramps, litterboxes with lower sides, larger boxes, boxes on every floor of the home, or relocation of litterboxes may be required for cats with mobility problems. Provision of nonslip surfaces



Figure 13.10 Canine Twist'n Treat manipulation feeding toy. (Courtesy of Premier Pet Products.)



Figure 13.11 Enrichment feeding toy for cats – FunKitty Doorway Dangli.
(Courtesy of Premier Pet Products.)

or rugs may provide stability for pets that tend to fall or slip, especially on stairs.

Drug therapy

A comprehensive evaluation of the pet's medical health, including any concurrent medications (or natural supplements) should precede the use of any medication in senior pets. Selegiline is an inhibitor of MAOB in the dog.^{58,59} It may enhance dopamine and other catecholamines in the cortex and hippocampus and has been shown both in the laboratory and clinical setting to enhance cognitive function.^{60,61} Selegiline has been shown to increase 2-phenylethylamine (PEA) in the dog brain. PEA is a neuromodulator that enhances dopamine and catecholamine function and may itself enhance cognitive function.⁶² Selegiline may also alleviate CDS by increased release and decreased reuptake of norepinephrine. Catecholamine enhancement may lead to improved neuronal impulse transmission. Selegiline metabolites, L-amphetamine, and L-methamphetamine may also enhance cognitive function. Selegiline may contribute to a decrease in free radical load in the brain. By inhibition of MAOB, fewer toxic free radicals may be produced. In addition, in dogs, selegiline increases enzymes that scavenge free radicals such as superoxide dismutase.⁶³ Selegiline also has neuroprotective effects on dopaminergic, noradrenergic, and cholinergic neurons. Some dogs improve within the first 2 weeks, while a few do not show improvement until the second month. Selegiline may also contribute to a decrease in free radical load in the brain. Selegiline should not be used concurrently with other MAO inhibitors such as amitraz and drugs that might increase serotonin transmission, such as SSRIs and tricyclic antidepressants.

Since the elderly are particularly susceptible to the effects of anticholinergic drugs, it is prudent to consider therapies

with less anticholinergic effects in both dogs and cats.^{38,39} While drugs that enhance cholinergic transmission might be beneficial, acetylcholine inhibitors currently in use for humans may not demonstrate an appropriate pharmacokinetic profile for use in pets.

Propentofylline is licensed in some countries (outside North America) for the treatment of dullness, lethargy, and depressed demeanor in old dogs. Propentofylline may increase blood flow to muscles and brain. It inhibits platelet aggregation and thrombus formation.

Drugs that may enhance the noradrenergic system such as adrafinil and modafinil might be useful in older dogs to improve alertness and help maintain normal sleep-wake cycles (by increasing daytime exploration and activity).⁶⁴ In one study, adrafinil led to a significant increase in locomotion compared to nicergoline (no longer available) or propentofylline.⁶⁵ These medications might therefore be a consideration to increase mental alertness and daytime activity.

Other treatment strategies may include the N-methyl-D-aspartate receptor antagonist memantine or perhaps hormone replacement therapy.⁶⁶ Estrogen may have anti-inflammatory and antioxidative effects and increase cerebral blood flow. In one small study, estrogen-treated female dogs made significantly fewer errors than males or placebo in a reversal learning task. However, the estrogen-treated aged females made more errors in spatial memory tasks.⁶⁷ In addition, two studies have found that intact aging male dogs showed less cognitive impairment than neutered dogs.^{8,9}

No drugs are presently approved for use in cats; therefore the possibility of improving signs must be weighed against the potential risks. Selegiline has also been anecdotally reported to be useful in clinical cases of cognitive dysfunction in senior cats.⁶⁸ Except for occasional gastrointestinal upset, adverse effects were not reported. Propentofylline has been anecdotally reported to be useful in cats at one-quarter of a 50-mg tablet daily.⁶⁸ When choosing medications for senior cats, it is prudent to avoid anticholinergic drugs.

Nutritional and dietary therapy

Another strategy in the treatment of CDS is to use dietary supplements to improve antioxidant defenses and reduce the toxic effects of free radicals. In humans, a number of studies have found that dietary management such as with fruits, vegetables, nuts, wholegrains, and vitamins E and C might reduce the risk or delay the onset of dementia.^{69,70} In dogs, a senior diet (Canine b/d, Hills Pet Nutrition) has been shown to improve the signs and slow the progress of cognitive decline.^{20,21} It is supplemented with a combination of fatty acids, antioxidants (vitamins C and E, beta carotene, selenium, flavonoids, and carotenoids), DL-alpha-lipoic diet, and L-carnitine, which are intended to enhance mitochondrial function. The diet improved performance on a number of cognitive tasks when compared to a nonsupplemented diet, beginning as early as 2–8 weeks after the onset of therapy. After 2 years, a control group (no enrichment, control diet) showed a dramatic decline in cognitive function, while those in either the enriched diet or the environmental enrichment group alone continued to do better than controls.^{20,21} However, the combined effect of the enriched diet plus the enriched environment provided the greatest improvement.⁵⁶

A new senior diet from Purina (Purina One Vibrant Maturity 7+) is supplemented with botanic oils containing MCT to provide ketone bodies as an alternate source of energy for aging neurons. Addition of MCT oils to the diet increases levels of the ketone body beta-hydroxybutyrate, which has been shown to improve cognition in memory-impaired humans, and to improve cognitive dysfunction significantly in canine patients.^{53,71} Diets supplemented with MCTs have also been shown to improve mitochondrial function, increase polyunsaturated fatty acids, and decrease amyloid precursor protein in the parietal cortex of aged dogs.^{72,73}

A number of clinical trials have shown improvements in clinical signs associated with CDS in dogs using dietary supplements containing phosphatidylserine, a membrane phospholipid, that is purported to facilitate neuronal activities such as signal transduction.⁷⁴ One product, Senilife (CEVA Animal Health) was tested on dogs using a memory task after administration of 60 days of either a placebo or the product. Performance accuracy was significantly improved in the treated group compared to baseline and dogs receiving the supplement in the first portion of the study maintained their improved performance.⁷⁵ The product also contains ginkgo biloba, which may have neuroprotective and antioxidant effects and is purported to enhance dopaminergic transmission and cerebral blood flow. Also included is vitamin B₆ (pyridoxine), vitamin E, and resveratrol, which may protect against oxidative damage and reduce beta-amyloid secretion. Although labeled for use in cats, efficacy studies have not been published. Another product containing phosphatidylserine, in combination with omega-3 fatty acids, vitamins E and C, L-carnitine, alpha-lipoic acid, coenzyme Q, and selenium (Activait, Vet Plus), demonstrated significant improvement over placebo in signs of disorientation, social interactions, and housesoiling in dogs.⁷⁶ A feline version of Activait, with no alpha-lipoic acid, is also available, but has not been tested in clinical trials.

SAME (Novifit, Virbac) is formed from methionine and adenosine triphosphate. SAME may help to maintain cell membrane fluidity and receptor function and regulate neurotransmitter levels as well as increase the production of glutathione. Improvement has recently been demonstrated to improve executive function in laboratory studies in both dogs and cats.⁷⁷ In addition, in a placebo controlled trial greater improvement in activity and awareness was reported in dogs in the SAME group after 8 weeks.⁷⁸ Since SAME may enhance central serotonin levels, caution should be used when combining with other drugs that might increase serotonin.

Also recently released in the USA is apoaquorin (Neutricks), a protein naturally found in jellyfish which has been shown in laboratory trials to improve learning and attention. Apoaquorin is a calcium-buffering protein that has been postulated to provide neuroprotection against aging, and consequently have positive effects in improving signs of brain aging.⁷⁹

Choline and phosphatidylcholine are precursors of acetylcholine and, as such, may enhance acetylcholine transmission, although there is no evidence to support their efficacy. In one preliminary study, 9 of 21 cats showed moderate to significant improvement in signs such as confusion and decreased appetite.⁸⁰

Adjunctive pharmacologic and natural therapeutics

In conjunction with drugs for CDS, it might be necessary also to consider medications that address specific signs. Since the elderly are particularly susceptible to the effects of anticholinergic drugs, it would be prudent when selecting this class of drugs for older pets to consider those with fewer anticholinergic effects and less sedation when there is an option. Antidepressants and anxiolytics may be indicated for the pet that is anxious or night waking. SSRIs may be beneficial in reducing underlying anxiety but should not be used concurrently with selegiline. SSRIs are neither sedating nor anticholinergic (with the exception of paroxetine). In addition, it may be prudent to begin treatment with lower initial doses. Since buspirone has few side-effects, it may be of use for anxiety in the elderly pet. Elderly patients may have decreased hepatic function. Since benzodiazepines such as diazepam and clorazepate are metabolized by oxidative pathways to active intermediate metabolites in the liver, lorazepam, oxazepam, and clonazepam might be safer for the elderly since they have no active intermediate metabolites. Natural therapies for anxiety and to aid sleep might include pheromones, melatonin, aromatherapy, Hormonease, L-theanine, and alpha-casozepine.

For a summary of management options for senior pet behavior problems, see [Box 13.4](#).

Box 13.4 Management of behavior problems in senior pets

1. Treat underlying medical problems (resolution or improvement will not be possible for some medical conditions). Therefore, the owner's expectations will need to be modified and accommodations may need to be made to the pet's schedule or environment to meet the needs or limitations of some senior pets
2. Treat cognitive dysfunction if present or suspected. This may lead to an improvement in clinical signs. Retraining may not be possible if cognitive function is impaired
3. Assess response to therapy
 - (a) If behavioral signs have been resolved following medical treatment, then the medical problem or cognitive dysfunction has likely been the cause of the behavioral problem
 - (b) If there has been some, but incomplete, improvement then review the diagnosis to determine if additional contributing problems may be improved with treatment
 - (c) Consider the impact of any drug, dietary, or alternative therapy on behavior, and if this is a factor consider whether an alternative drug or dose might be appropriate and whether the benefits outweigh potential side-effects
 - (d) Review the progress of the problem as there may be learned and conditioned factors that will also need to be addressed with behavior therapy and environmental modification
4. Treat primary or secondary behavior problems
5. Continue or increase enrichment through increased social interactions, ongoing training, and novel ways to engage in exploration and object play, e.g., food manipulation toys
6. Make changes slowly to reduce potential stress. Identify sources of stress or anxiety, prevent or avoid in the short term, and work to resolve with response substitution and counterconditioning in the long term

CASE EXAMPLES

Case 1

Tony, an 11-year-old orange intact male tabby cat, began to spray on the patio doors. Neighborhood cats frequented the patio but until recently Tony had exhibited no indoor spraying. A complete behavioral assessment revealed no obvious changes to Tony's household or environment, and there were no obvious changes on physical examination. Before behavior therapy was instituted, a complete laboratory workup was performed, including complete blood counts, serum biochemistry, a thyroid profile, and urinalysis. Tony's thyroxine level was markedly elevated and hyperthyroidism was diagnosed. Thyroidectomy was performed and Tony's spraying immediately ceased.

Approximately 6 months later Tony began to spray again near the patio door. The thyroid levels were within normal limits and a medical cause could not be found. The owners were able to prevent further spraying by confining Tony away from the patio doors when the owners were out, installing vertical blinds, and supervising Tony when they were at home since he would not spray in their presence. A motion detector sprinkler was also used outdoors to keep neighborhood cats away from the property. These changes were successful in stopping the recurrence of the urine spraying.

Case 2

Jody was a 13-year-old, 6-kg, spayed female Beagle cross who had begun to wake the owners every night by pacing and vocalizing. Jody traditionally slept in her dog bed on the bedroom floor and when the problem first began the owners attempted to leave Jody outside the bedroom with the door closed. This only led to louder vocalization as well as digging and scratching at the door. The owners would attempt to put Jody outdoors to eliminate when she woke but she merely waited outside the door to be allowed back in.

Medical evaluation, routine laboratory testing, and physical examination revealed no significant abnormalities, except for a moderate increase in serum alkaline phosphatase. Further studies were conducted in consideration of a possible diagnosis of hyperadrenocorticism. Results of a low-dose dexamethasone suppression test were equivocal but there was no measurable increase in water intake and specific gravity of the urine of first morning sample showed a concentration of >1.025 . A diagnosis of hyperadrenocorticism could not be confirmed at this time. During the daytime there was no apparent increased frequency of elimination

and the owners noted no other apparent changes except a decreased responsiveness to previously trained commands and occasional restless pacing. The owners also felt there was a decrease in hearing ability, although the dog could successfully be woken with a verbal command when she was sleeping.

Although specific causes for the night waking and increased restlessness could not be identified, the decrease in hearing ability and CDS were considered to be the most likely causes. The owners were instructed to provide an additional play, exercise, and training session in the afternoon and prior to bedtime, and to try and keep Jody awake and stimulated with feeding and chew toys during the evenings, while preventing access to her preferred bedding area in the bedroom. They were also instructed to practice a relaxed down each time Jody wanted anything from the owners, whether attention, play, or a walk, and any time they were giving something of value, including food, treats, or chew toys. The owners were advised to put Jody's bed in a plastic dog kennel with the door left open and a blanket draped across to reduce external stimuli. If Jody did wake at night, the owners were instructed to ignore her or to utilize the relaxed down command. If she did not respond, she was to be locked in the main-floor laundry room (with a mat for bedding) until she quieted down. Jodie was placed on selegiline each morning to try and enhance daytime alertness and play and a senior antioxidant-supplemented diet for cognitive dysfunction was dispensed.

Overall she made good improvement. She appeared to be more responsive to commands, more enthusiastic about greeting and playing with the owners, and exhibited less daytime pacing. However, the night waking continued and the owner requested further drug therapy. Attempts to change her feeding schedule to include her evening meal earlier (5 pm) and later (11 pm) also had no apparent effect.

Oxazepam was dispensed at 2 mg prior to bedtime and an Adaptil diffuser was placed in the bedroom. In addition, the owners were instructed to close the door of Jody's crate so that she could not jump on the bed to get their attention. The first few nights Jody slept through the night and on the third night, when Jody awoke, the owners used her relaxed down command several times until she lay back down and returned to sleep. On one night she was moved to the laundry room where she returned to sleep for the remainder of the night. After 1 week the medication was reduced by 50% and after the second week it was withdrawn completely.

Age-related cognitive and affective disorders (ARCAD)

In addition to an evaluation of the clinical signs through a careful and comprehensive assessment of the history, French behaviorists have developed scales to give practitioners more objective tools for diagnosis and treatment. One scale has been designed to assess aggressiveness and a second to help identify emotional and cognitive disorders (EDED scale). Details of these two scales can be found in [Chapter 22](#). In addition, a scale has been developed specifically for the older pet to evaluate for cognitive decline and affective disorders (the ARCAD scale). The calculation grid of the ARCAD score was constructed according to the same rules as the EDED scale. While the parameters that make up both scales are very similar, they can have different diagnostic meanings. Therefore, while the EDED scale helps evaluate dogs of all ages,

the ARCAD measurement provides a better means of assessing problems that might be specific to the older dog. Moreover, the ARCAD scale helps discriminate affective disorders (emotional score) from cognitive disorders to determine if drugs such as selegiline might be indicated.

The information in [Table 13.3](#) on the ARCAD scale and the specific behavior disorders of older dogs are described by Dr. Patrick Pageat and published in his French text, *Pathologie du comportement du chien*.⁸¹ It is interesting to note that a significant correlation has been shown between the ARCAD score and the occurrence of beta-amyloid deposits in the brain (just as there appears to be a correlation between beta-amyloid deposition and the clinical signs of cognitive dysfunction). Dogs with high ARCAD scores were shown to have deposits of beta-amyloid substance in the temporal cortex and the hypothalamus.¹⁴ The correlation is stronger between the affective subscore and the occurrence of these deposits.

Table 13.3 The Age-Related Cognitive and Affective Disorders (ARCAD) scale (client form #16, printable version available online)

Affective or emotional parameters		
Behavior	Item	Score
Eating	Hyperphagia/tachyphagia	5
	Anorexia or hyporexia	3
	Dysorexia	3
	Regurgitation and reingestion	2
	Normal appetite	1
Drinking	Polydipsia	4
	Champing at water without swallowing	3
	Normal	1
Autostimulatory behavior	Repeated movements of licking, nibbling	5
	Stereotyped nibbling, tail-chasing	3
	Attention-seeking licking and nibbling	2
	Normal body care	1
Elimination behavior	Defecates and urinates where he stands (including sleeping area)	5
	Defecates and urinates where he stands (sparing sleeping area)	4
	Defecates and urinates in small scattered amount	3
	No change	1
Sleep	Restless at bedtime	5
	Switches between insomnia and hypersomnia	3
	Sleeps over 15 hours a day	2
	Unchanged	1
Total emotional score =		
Cognitive parameters		
Learned specific behaviors	Virtually no response	5
	Random responses	3
	Unchanged	1
Self-control	Tends to generalize aversive experiences	5
	Difficult to calm down after a stressful event	3
	No apparent changes	2
Learned social behavior	Steals and retains the stolen objects	5
	Bites without warning	2
	Does not submit itself when rebuked	3
	Unchanged	1
Adaptive capabilities	Looks indifferent to changes	5
	Unable to stand changes in routine	3
	Retreats from novel situations	2
	Changes induce normal interest	1
Total cognitive score =		
Total ARCAD score = total emotional score + total cognitive score =		

Continued

Table 13.3 The Age-Related Cognitive and Affective Disorders (ARCAD) scale (client form #16, printable version available online)—cont'd**Interpretation of ARCAD scoring**

Interpretation	Score
Normal aging	9–15
Re-evaluate in 6 months	16–21
Dysthymia (depression)	22–30
Old-dog hyperaggression	18–30*
Involutive depression	31–44

*With a score of 3 or 4 for social learning and a score of 3 for self-regulation; in association with a measurement from the aggressiveness index (see Chapter 21 for details).

Behavior disorders in aging dogs: Pageat (French) diagnoses and treatment

[Authors' note: All of the following terms, diagnoses and treatments are attributed to Dr. Patrick Pageat and are included here for completeness and for the exposure of our readers to alternative approaches to behavioral conditions. The authors have little first-hand experience with this approach and would like to thank Dr. Pageat for allowing his work to be reproduced in this book.]

Hyperaggressiveness in old dogs

Description

These are dogs aged 7 years and over that display a permanent increase in the tendency to produce aggression in all sectors of their social life. The aggression is destructured in that the bite precedes the threat, and there is no appeasement phase. Aggression may no longer be inhibited in response to submissive postures or when the opponent is immature (pups and children). Most of these dogs are also bulimic.

Etiology and pathogenesis

Based on response to therapy, there appears to be a dysfunction in the serotonergic structures. Although piracetam helps to re-establish the normal sequence of the aggressive episodes, it does not decrease their frequency. A decrease in the frequency of aggression is only observed when drugs that increase serotonergic transmission are administered. Dogs that are administered fluoxetine, or clomipramine improve, whereas substituted benzamides, antiproduative neuroleptics, or risperidone worsen the disorder. Tumors of the cerebral cortex may be a source of this clinical picture.

Epidemiology

There appears to be no breed, gender, or family predisposition.

Diagnosis

- Increase in the frequency of the whole set of aggressive behaviors
- Inversion of the first two phases of aggression – bite then threat

- Disappearance of aggression inhibition in response to submission of the opponent or if it is immature
- Bulimia
- Onset after the age of 7 years.

Differential diagnosis

One must consider sociopathy at the “secondary hyper-aggressivity” stage and dysthymia of old dogs. In the first case, the dog would have been behaving aggressively for several years and the aggression sequences observed at the time of the diagnosis are characterized by the disappearance of the intimidation and appeasement phases. In dysthymia of old dogs, the aggressions observed are irritable aggressions with a normal sequence. Moreover, these only appear during the productive phases, whereas the dog is “normal” or depressed during the rest of the time.

Prognosis

This is guarded. If young children are at risk it may be preferable to consider euthanasia of the dog. It is difficult to get a complete and definitive cure. Relapses are frequent (44%) and so require continuous vigilance of the dog.

Treatment

Therapy relies on SSRIs such as fluoxetine (2 mg/kg), or clomipramine (1–4 mg/kg), which helps control the disorder very rapidly. This is used at a dosage of 0.5–1 mg/kg spread over one to two daily doses. During the use of SSRIs, piracetam (20–40 mg/kg) can be added to the treatment.

Author's note: Piracetam is used for cognitive enhancement in Europe for humans with Alzheimer or vascular dementia. It is not licensed in North America. It may act to increase oxygenation and improve blood flow in the brain and increase glucose utilization.

Confusional syndrome of old dogs

This category encompasses disorders characterized by a profound alteration in the cognitive capacities of the animal and thus an alteration in all forms of learning. A clinical entity can be defined in this category: “the confusional syndrome of old dogs.”

Description

The clinical picture resembles what has been described as CDS. The animal shows a general alteration in learned behaviors, which manifests itself in a discordance of its habits (e.g., doesn't come for its usual walk, doesn't greet, doesn't recognize familiar people), housesoiling, and disorganized activity. The owners may describe episodes of spatial disorientation (e.g., lost in a familiar room, cannot find exit). We also notice a temporal disorientation, with the dog becoming active in the middle of the night. This state may alternate, especially at the start of the development, with almost normal periods.

Etiology and pathogenesis

Cerebral aging is its cause and may be related to lesions of the Alzheimer type observed in some subjects.

Diagnosis

- Episodes of spatial disorientation
- Episodes of temporal disorientation with no disorder in the structure of sleep, nor the total length of sleep
- An alteration in learned responses (rituals, specific forms of learning, and cleanliness)
- Disorders appear intermittently at the start of the development.

Differential diagnosis

In relation to thymic disorders (depression), the absence of an alteration in the structure of sleep is a major factor in differential diagnosis.

Prognosis

This is guarded since no treatment provides a definitive resolution.

Treatment

Only selegiline provides lasting improvement. Behavior therapy can only be instituted if sufficient cognitive function can be re-established. However, since the publication of this text there are now new therapeutic options (described above) that might improve cognitive dysfunction and/or its clinical signs.

Thymic disorders of old dogs

Involutive depression

Description

This depression is of a chronic type. Affected dogs display very deep cognitive and affective disorganization. We observe an increasingly marked loss in acquired behavioral knowledge. As a result, the dogs may housesoil, they may resume oral exploration of the environment, they no longer respond to known commands, and are unable to organize social interactions. Housesoiling is characterized by enuresis and encopresia, as well as a loss in capacity to choose a specific location for elimination. As with pups below the age of 4

months, the old depressive dog may relieve itself wherever it is at the time it feels prompted. Oral exploration often leads to the ingestion of foreign bodies. As a result, the vet must suspect involutive depression in any old dog presented for consultation because of this. Exploratory behavior is then completely disorganized. Social interactions are considerably modified. Dogs are no longer capable of maintaining a stable social structure; they tend to hide away. Sleeping disorders are particularly severe. Their nature is identical to the one seen in humans with chronic depression, but awakenings are much more sudden and usually accompanied by autonomic disorders (micturition, defecation, ptialism, and vomiting), as well as howling or sharp cries.

Etiology and pathogenesis

Endogenous and exogenous factors can be identified. In addition to cerebral aging, cerebral lesions and endocrinopathies can be involved in the genesis of the disorders. The most frequently associated cerebral lesions are tumors of the diencephalon and intracranial hypertension. Hypothyroidism and hyperadrenocorticism may also play an important role. Hypothyroidism seems less tolerable to old subjects because the bioavailability of thyroxine is decreased with age. Hyperadrenocorticism may be associated with an involutive depression, but is usually encountered in dysthymias. The most important exogenous factor is the existence of an untreated anxious state in the adult. This predisposition factor is usually aggravated by the attitude of the owners to the signs, particularly housesoiling. Owners frequently tend to keep the dog confined in order to limit soiling, which increases the animal's stress and thus worsens its depression. Therapy techniques, such as systematic desensitization, which aim to decrease the occurrence of certain emotional responses when exposed to well-identified stimuli, may worsen the state of distress in these dogs.

Epidemiology

This condition affects mainly dogs aged 7 years and above. There is no breed predisposition. Females represent 65% of the animals affected. The most useful epidemiological factors to highlight concern the impact of a halt to a specific activity and socioaffective disturbances (arrival of a pup).

Diagnosis

Compulsory conditions:

- A chronic depressive state (with sleeping disorders)
- At least two involutive manifestations: oral exploration, housesoiling, the disappearance of learning, social contact via a sucking or nibbling of the skin of the partner (human or dog).

Complementary signs (at least two)

- Continuous moaning
- An acral lick dermatitis (often discrete lesions limited to the skin thickening without alopecia)
- Hyperattachment
- Destruction of furniture during separation
- Wandering, "dragging its feet," and the use of stereotyped routes.

Differential diagnosis

Possible diagnoses are a chronic depression of adults or dysthymia of old dogs. The difference with a chronic depression in adults relies on the absence of an involutive process in this condition. In the case of dysthymia of old dogs, hyposomniac episodes of the productive phase must be sought, as well as aggression.

Prognosis

This is generally good; the only limiting factor may be the lack of patience of the owners.

Treatment

Two drug approaches can be considered. The one which gives the most consistent results is clomipramine (1–4 mg/kg) in association with piracetam (20–40 mg/kg). When anxiety manifestations complicate the clinical picture, it may be useful to associate an anxiolytic drug. The other solution, in subjects whose cognitive processes are severely altered, consists of prescribing selegiline (0.5 mg/kg). However, this treatment does not provide a decrease in the soiling rapidly enough and may not be acceptable to owners who demand immediate modifications. Behavior therapy is to reinstate contact with the dog by the owners who had kept it away because of the soiling.

Dysthymia

Description

Dysthymia evolves in two stages, with the first one corresponding to a unipolar disorder, then a second one characterized by a move to bipolar disorder. The most typical characteristic of this condition is the loss of capacity to evaluate the passage and length of one's body. Old dysthymic dogs tend to force their way through and may remain stuck

for hours growling and whining. Any external attempt to help might trigger an aggressive response.

Etiology and pathogenesis

This is similar to involutive depression and may follow the same process as the disorganization of mood. Hypothyroidism does not seem to be associated with dysthymias, whereas hyperadrenocorticism must always be considered. In fact, dysthymias can be observed both in animals suffering from hyperadrenocorticism and with animals that have received injections of long-acting corticosteroids.

Epidemiology

There appears to be no breed, gender, or familial group predisposition.

Diagnosis

This is based on the appearance after the age of 7 years of a unipolar then a bipolar dysthymia and the incapacity to evaluate a passage with obsessive attempts to force its way through.

Differential diagnosis

Ruleouts are either bipolar dysthymia of adults or involutive depression. In bipolar dysthymia of adults, the move from a unipolar initial form as well as the tendency to move into impossible passages is absent. In involutive depression, there is the presence of involutive manifestations and an absence of the productive signs of dysthymia.

Prognosis and treatment

Prognosis is guarded. Treatment must be maintained during the whole life of the dog. This is only biological. The only molecule that currently provides consistent results is selegiline (0.5 mg/kg).

References

1. Landsberg GM, DePorter T, Araujo JA. Management of anxiety, sleeplessness and cognitive dysfunction in the senior pet. *Vet Clin North Am Small Anim Pract* 2011;41:565–90.
2. Salvin HE, McGreevy PD, Sachev PS, et al. Under diagnosis of canine cognitive dysfunction; a cross-sectional survey of older companion dogs. *Vet J* 2010;184, 277–81.
3. Mariotti VM, Landucci M, Lippi I, et al. Epidemiological study of behavioural disorders in elderly dogs. Abstract. In: Heath, S, editor. *Proceedings of the 7th International Meeting of Veterinary Behaviour Medicine*. ESVC Belgium; 2009. pp. 241–3.
4. Horwitz D. Dealing with common behavior problems in senior dogs. *Vet Med* 2001;96:869–87.
5. Nielson JC, Hart BL, Cliff KD, et al. Prevalence of behavioral changes associated with age-related cognitive impairment in dogs. *J Am Vet Med Assoc* 2001;218:1787–91.
6. Golini L, Clangeli R, Tranquillo V, et al. Association between neurologic and cognitive dysfunction signs in a sample of aging dogs. *J Vet Behav* 2009;4:25–30.
7. Osella MC, Re G, Odore R, et al. Canine cognitive dysfunction syndrome: prevalence, clinical signs and treatment with a neuroprotective nutraceutical. *Appl Anim Behav Sci* 2007;105:297–310.
8. Azkona G, Garcia-Beleguer S, Chacon G, et al. Prevalence and risk factors of behavioral changes associated with age-related cognitive impairment in geriatric dogs. *J Small Anim Pract* 2009;50:87–91.
9. Hart BL. Effect of gonadectomy on subsequent development of age-related cognitive impairment in dogs. *J Am Vet Med Assoc* 2001;219:51–6.
10. Bain MJ, Hart BL, Cliff KD, et al. Predicting behavioral changes associated with age-related cognitive impairment in dogs. *J Am Vet Med Assoc* 2001;218:1792–5.
11. Gunn-Moore D, Moffat K, Christie LA, et al. Cognitive dysfunction and the neurobiology of ageing in cats. *J Small Anim Pract* 2007;48:546–53.
12. Cummings BJ, Satou T, Head E, et al. Diffuse plaques contain c-terminal Aβ42 and not Aβ40: evidence from cats and dogs. *Neurobiol Aging* 1996;17:4653–9.
13. Cummings BJ, Head E, Afagh AJ, et al. β-Amyloid accumulation correlates with cognitive dysfunction in the aged canine. *Neurobiol Learn Mem* 1996;66:11–23.
14. Colle M-A, Hauw J-J, Crespau F, et al. Vascular and parenchymal beta-amyloid deposition in the aging dog: correlation with behavior. *Neurobiol Aging* 2000;21:695–704.

15. Tapp PD, Siwak CT, Gao FQ, et al. Frontal lobe volume, function, and beta-amyloid pathology in a canine model of aging. *J Neurosci* 2004;24:8205–13.
16. Borrás D, Ferrer I, Pumarola M, et al. Age related changes in the brain of the dog. *Vet Pathol* 1999;36:202–11.
17. Milgram NW, Head E, Weiner E, et al. Cognitive functions and aging in the dog: acquisition of nonspatial visual tasks. *Behav Neurosci* 1994;108:57–68.
18. Tapp PD, Siwak CT, Estrada J, et al. Size and reversal learning in the beagle dog as a measure of executive function and inhibitory control in aging. *Learn Mem* 2003;10:64–73.
19. Studzinski CM, Christie LA, Araujo JA, et al. Visuospatial function in the beagle dog: An early marker of cognitive decline in a model of human cognitive aging and dementia. *Neurobiol Learn Mem* 2006;86:197–204.
20. Milgram NW, Zicker SC, Head EA, et al. Dietary enrichment counteracts age-associated cognitive dysfunction in canines. *Neurobiol Aging* 2002;23:737–45.
21. Araujo JA, Studzinski CM, Head E, et al. Assessment of nutritional interventions for modification of age-associated cognitive decline using a canine model of human aging. *AGE* 2005;27:27–37.
22. Head E, Mehta R, Hartley J. Spatial learning and memory as a function of age in the dog. *Behav Neurosci* 1995;109:851–8.
23. Siwak CT, Tapp PD, Milgram NW. Effect of age and level of cognitive function on spontaneous and exploratory behaviors in the beagle dog. *Learn Mem* 2001;8:65–70.
24. Harrison J, Buchwald J. Eyeblink conditioning deficits in the old cat. *Neurobiol Aging* 1983;4:45–51.
25. McCune S, Stevenson J, Fretwell L, et al. Aging does not significantly affect performance in a spatial learning task in the domestic cat (*Felis silvestris catus*). *Appl Anim Behav Sci* 2008;3:345–56.
26. Milgram NW, Landsberg GM, De Rivera C, et al. Age and cognitive function in the domestic cat. Proceedings ACVB/AVSAB Scientific Paper Session, St. Louis, 2011.
27. Levine MS, Lloyd RL, Hull CD, et al. Neurophysiological alterations in caudate neurons in aged cats. *Brain Res* 1987;401:213–30.
28. Levine MS, Lloyd RL, Fisher RS, et al. Sensory, motor and cognitive alterations in aged cats. *Neurobiol Aging* 1987;8:253–63.
29. Senanarong V, Cummings JL, Fairbanks L, et al. Agitation in Alzheimer's disease is a manifestation of frontal lobe dysfunction. *Dement Geriatr Cogn Disord* 2004;17:14–20.
30. McCurry SM, Gibbons LE, Logsdon RG, et al. Anxiety and nighttime behavioral disturbances. Awakenings in patients with Alzheimer's disease. *J Gerontol Nurs* 2004;30:12–20.
31. Salvin HE, McGreevy PD, Sachdev PS, et al. The canine cognition dysfunction rating scale (CCDR): a data driven and ecologically relevant assessment tool. *Vet J* 2011;188, 331–6.
32. de Rivera C, Dobson H, Denenberg S, et al. Longitudinal magnetic resonance spectroscopy changes in aged beagle dogs. In: Heath SE, editor. 7th ed. IVBM; 2009. pp. 108–10, ESVC, Belgium, 108–10.
33. Landsberg GM, Denenberg S, Araujo J. Cognitive dysfunction in cats. A syndrome we used to dismiss as old age. *J Feline Med Surg* 2010, 12, 837–48.
34. Zhang C, Hua T, Zhu Z, et al. Age related changes of structures in cerebellar cortex of cat. *J Biosci* 2006;31:55–60.
35. Dobson H. Aging and imaging based neuropathology in the cat. St. Louis: ACVB/AVSAB Scientific Symposium; 2011.
36. Nakamura S, Nakayama H, Kiatipattanasakul W, et al. Senile plaques in very aged cats. *Acta Neuropathol* 1996;91:437–39.
37. Milgram NW, Ivy GO, Head E, et al. The effect of L-deprenyl on behavior, cognitive function, and biogenic amines in the dog. *Neurochem Res* 1993;18:1211–9.
38. Araujo JA, Studzinski CM, Milgram MW. Further evidence for the cholinergic hypothesis of aging and dementia from the canine model of aging. *Prog Psychopharmacol Biol Psychiatry* 2005;29:411–22.
39. Araujo JA, Chan ADF, Winka LL, et al. Dose-specific effects of scopolamine on canine cognition: impairment of visuospatial memory, but not visuospatial discrimination. *Psychopharmacology* 2004;175:92–8.
40. Pugliese M, Cangitano C, Ceccariglia S, et al. Canine cognitive dysfunction and the cerebellum: acetylcholinesterase reduction, neuronal and glial changes. *Brain Res* 2007;1139:85–94.
41. Zhang JH, Sampogna S, Morales FR, et al. Age-related changes in cholinergic neurons in the laterodorsal and the pedunculo-pontine tegmental nuclei of cats: a combined light and electron microscopic study. *Brain Res* 2005;1052:47–55.
42. Takeuchi Y, Uetsuka K, Murayama M, et al. Complementary distributions of beta-amyloid and neprilysin in the brains of dogs and cats. *Vet Pathol* 2008;45:455–66.
43. Head E, McCleary R, Hahn FF, et al. Region-specific age at onset of beta-amyloid in dogs. *Neurobiol Aging* 2000;21:89–96.
44. Bobik M, Thompson T, Russel MJ. Amyloid deposition in various breeds of dogs. *Soc Neurosci Abstracts* 1994;20:172.
45. Brellou G, Vlennas I, Lekkas S, et al. Immunohistochemical investigation of beta-amyloid (Aβeta) in the brain of aged cats. *Histol Histopathol* 2005;20:725–31.
46. Gunn-Moore DA, McVee J, Bradshaw JM et al. β-Amyloid and hyperphosphorylated tau deposition in cat brains. *J Feline Med Surg* 2006;8:234–42.
47. Head E, Moffat K, Das P, et al. Beta-amyloid deposition and tau phosphorylation in clinically characterized aged cats. *Neurobiol Aging* 2005;26:749–63.
48. Pugliese M, Mascort J, Mahy N, et al. Diffuse beta-amyloid plaques and hyperphosphorylated tau are unrelated processes in aged dogs with behavioral deficits. *Acta Neuropathol* 2006;112:175–83.
49. Head E, Moffat K, Das P, et al. Beta-amyloid deposition and tau phosphorylation in clinically characterized aged cats. *Neurobiol Aging* 2005;26:749–63.
50. Head E, Liu J, Hagen TM, et al. Oxidative damage increases with age in a canine model of human brain aging. *J Neurochem* 2002;82:375–81.
51. Shigengana MK, Hagen TM, Ames BN. Oxidative damage and mitochondrial decay in aging. *Proc Natl Acad Sci USA* 1994;91:10771–8.
52. London ED, Ohata M, Takei H, et al. Regional cerebral metabolic rate for glucose in beagle dogs of different ages. *Neurobiol Aging* 1983;4, 121–6.
53. Yuanlong P, Larson B, Araujo JA, et al. Dietary supplementation with medium-chain TAG has long-lasting cognition-enhancing effects in aged dogs. *Br J Nutr* 2010;103:1746–54.
54. Overall KL, Dunham AE, Frank DF. Frequency of nonspecific clinical signs in dogs with separation anxiety, thunderstorm phobias, and noise phobia alone or in combination. *J Am Vet Med Assoc* 2001;219:467–73.
55. Shearer T, editor. Palliative medicine and hospice care. *Vet Clin North Am* 2010;41:477–702.
56. Milgram NW, Head EA, Zicker SC, et al. Long term treatment with antioxidants and a program of behavioral enrichment reduces age-dependent impairment in discrimination and reversal learning in beagle dogs. *Exp Gerontol* 2004;39:753–65.
57. McMillan FD. Maximizing quality of life in ill animals. *J Am Anim Hosp Assoc* 2003;39:227–35.
58. Milgram NW, Ivy GO, Head E, et al. The effect of L-deprenyl on behavior, cognitive function, and biogenic amines in the dog. *Neurochem Res* 1993;18: 1211–9.
59. Ruehl WW, Bruyette WW, DePaoli DS, et al. Canine cognitive dysfunction as a model for human age-related cognitive decline, dementia, and Alzheimer's disease: clinical presentation, cognitive testing, pathology and response to L-deprenyl therapy. *Prog Brain Res* 1995;106:217–25.
60. Head E, Hartley J, Mehta R, et al. The effects of L-deprenyl on spatial short term memory in young and aged dogs. *Prog*

- Neuropsychopharmacol Biol Psychiatry 1996;20:515.
61. Campbell S, Trettien A, Kozan B A non-comparative open label study evaluating the effect of selegiline hydrochloride in a clinical setting. *Vet Ther* 2001;2:24–39.
 62. Milgram NW, Ivy GO, Murphy MP, et al. Effects of chronic oral administration of l-deprenyl in the dog. *Pharmacol Biochem Behav* 1995;51:421–8.
 63. Carillo MC, Ivy GO, Milgram NW, et al. Deprenyl increases activity of superoxide dismutase. *Life Sci* 1994;54:1483–9.
 64. Siwak CT, Gruet P, Woehrl F, et al. Behavioral activating effects of adrafinil in aged canines. *Pharmacol Biochem Behav* 2000;66, 293–300.
 65. Siwak CT, Gruet P, Woehrl F, et al. Comparison of the effects of adrafinil, propentofylline and nicergoline on behavior in aged dogs. *Am J Vet Res* 2000;61, 1410–4.
 66. Martinez-Coria H, Green KN, Billings LM, et al. Memantine improves cognition and reduces Alzheimer's-like neuropathology in transgenic mice. *Am J Pathol* 2010;176, 870–80.
 67. Tapp PD, Siwak CT, Head E, et al. Sex differences in the effect of oestrogen on size discrimination learning and spatial memory. In: Overall KL, Mills DS, Heath SE, et al, editors. *Proceedings of the 3rd IVBM*. UK: UFAW, Wheathampstead; 2001. pp. 136–8.
 68. Landsberg GM. Therapeutic options for cognitive decline in senior pets. *J Am Anim Hosp Assoc* 2006;42:407–13.
 69. Joseph JA, Shukitt-Hale B, Denisova NA, et al. Long-term dietary strawberry, spinach, or vitamin E supplementation retards the onset of age-related neuronal signal transduction and cognitive behavioral deficits. *J Neurosci* 1998;18:8047–55.
 70. Barberger-Gateau P, Raffaitin C, Letenneur L, et al. Dietary patterns and risk of dementia: a three-city cohort study. *Neurology* 2007;69:1921–193.
 71. Reger MA, Henderson ST, Hale C, et al. Effects of beta-hydroxybutyrate on cognition in memory-impaired adults. *Neurobiol Aging*. 2004;25, 311–4.
 72. Taha AY, Henderson ST, Burnham WM. Dietary enrichment with medium chain-triglycerides (AC-1203) elevates polyunsaturated fatty acids in the parietal cortex of aged dogs; implications for treating age-related cognitive decline. *Neurochem Res* 2009;34:1619–25.
 73. Studzinski CM, MacKay WA, Beckett TL, et al. Induction of ketosis may improve mitochondrial function and decrease steady-state amyloid-beta precursor protein (APP) levels in the aged dog. *Brain Res* 2008;1226:209–17.
 74. Cena F, Colangeli R, Fassola F, et al. Effect of a combination of phosphatidylserine, ginkgo biloba, vitamin E and pyridoxine on clinical signs of brain ageing: a pilot multicentric study. *Proc ECVBM-CA* 2005;2:127–35.
 75. Araujo JA, Landsberg GM, Milgram NW, et al. Improvement of short-term memory performance in aged beagles by a nutraceutical supplement containing phosphatidylserine, ginkgo biloba, vitamin E and pyridoxine. *Can Vet J* 2008;49:379–85.
 76. Heath SE, Barabas S, Craze PG. Nutritional supplementation in cases of canine cognitive dysfunction – a clinical trial. *Appl Anim Behav Sci* 2007;105:274–83.
 77. Araujo JA, Faubert ML, Brooks ML, et al. Novifit (NovisSAmE) tablets improve executive function in aged dogs and cats; implications for treatment of cognitive dysfunction syndrome. *Intern J Appl Res Vet Med* 2012;10:90–8.
 78. Rème CA, Dramard V, Kern L, et al. Effect of S-adenosylmethionine tablets on the reduction of age-related mental decline in dogs: a double-blind placebo-controlled trial. *Vet Ther* 2008;9:69–82.
 79. Landsberg GM, Milgram NW, Visnesky M. Effect of apoeaquorin on cognitive function in aged canines. St. Louis: ACVB/ AVSAB Proceedings; 2011.
 80. Messonier SP. Cognitive disorder: the natural health bible for dogs and cats. Roseville, CA: Prima; 2001. pp. 56–7.
 81. Pageat P. *Pathologie du comportement du chien*. 2nd ed. Paris: Editions du Point Veterinaire; 1998.

Recommended reading

- American Association of Feline Practitioners Senior Care Guidelines, <http://www.catvets.com/professionals/guidelines/publications/?Id=398>, December 2008, accessed June 22, 2010.
- Epstein M, Kuehn N, Landsberg G, et al. AAHA Senior Care Guidelines for Dogs and Cats. *J Am Anim Hosp Assoc* 2005;41(2):81–91.
- Landsberg GM, Denenberg S, Araujo J. Cognitive dysfunction in cats. A syndrome we used to dismiss as old age. *J Fel Med Surg* 2010; 12, 837–48.
- Landsberg GM, DePorter T, Araujo JA. Management of Anxiety, Sleeplessness and Cognitive dysfunction. *Vet Clin N Am* 2011;41:565–90.
- Landsberg GM, Nicholl J, Araujo JA. Cognitive dysfunction syndrome. A disease of canine and feline brain aging. *Vet Clin N Am* 2012;42 (in press).
- Client educational material**
- cdisindogs.com.
- Landsberg G, Hunthausen W. AAHA press (Senior Moments) aahanet.org.
- Landsberg G, Horwitz D. Behavior Advice for Clients, Lifelearn; 2012.

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Unruly behaviors, training and management – dogs

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The behavioral issues discussed in this chapter are normal canine behaviors that are undesirable to the owners. Problems are likely to arise if the family does not provide the dog with an enriched environment and the direction it needs to behave appropriately. Breed, sex, individual differences, environment, and the family all play a role as to whether these problems arise. Preventive counseling and screening at each veterinary visit can provide the family with the advice and resources they need to understand normal behavior, meet the behavioral requirements of the pet, and set the pet up for success (see [Chapter 4](#)). Families are often misinformed or misguided into using punishment or physical dominance to suppress undesirable behaviors. Punishment is generally counterproductive as it does not train the pet how to behave acceptably in the situation and can cause fear and anxiety. For each of the following problems, the template should be to: (1) provide outlets necessary to address normal needs; (2) remove rewards for

unwanted behaviors; (3) teach desirable behaviors with rewards; and (4) prevent, avoid, ignore, or interrupt undesirable behaviors.

Jumping up on people

This is a common problem, especially for owners of young, friendly dogs. Dogs will jump up on people as a greeting, when they want to play, when they want food, and occasionally as a socially assertive gesture.

Families often find it difficult to stop the behavior because:

- they haven't taught the pet the desirable way to interact in social situations
- they have no effective humane way to interrupt the behavior
- the family is inconsistent in their response to jumping, including intermittent reinforcement

Table 14.1 Management and treatment for the dog that jumps up

Method	Comments
Structured interactions	Sit calmly (say please) for everything of value (nothing in life is free) – see handout 13
Obedience training	Reward-based training to teach desirable greeting behaviors such as sit, down, or go to mat exercises
Exercise and play	Regularly scheduled exercise, play and training provide for the pet's physical and social needs
Avoid eliciting the behavior	Keep greetings low-key. Never encourage jumping up. Be consistent, even with visitors
Ignore the behavior	Behaviors that are no longer rewarded will become extinct. Unfortunately, they will usually first get worse as the pet tries harder to attain the payoffs it used to get (extinction burst). Advise owners that if the behavior is getting worse, it will shortly get better!
Rewards	The dog should be praised with a calm voice if it approaches and does not jump up. Enter the home with treats or a toy to encourage and reinforce desirable greeting behaviors such as "sit" or "down"
Negative punishment	Punish by taking away all attention immediately if the dog begins to jump up
Interrupting and controlling undesirable behavior	A verbal "off" or "tssk" or a device such as a shake can, air spray or whistle may interrupt the behavior so that desirable behavior can be rewarded, as long as it does not incite fear and avoidance, which would be counterproductive. A leash and head halter could be left attached to prompt the dog physically into a sit (see handout #24, printable version available online, and abrionline.org).
Negative reinforcement	When using a leash and head halter to prompt the behavior, the release of tension as soon as the dog sits can serve to reinforce the behavior
Response substitution (differential reinforcement)	Teach a behavior that is incompatible with jumping up. For example, train "sit," "down," or "go to a mat" each time you or a guest enters and give high-value rewards immediately for the desired response. A Manners Minder is useful for immediately and remotely rewarding the dog for going to a mat
Punishment	If punishment is the only treatment used, it is not uncommon for the dog to habituate to the punishment, at which point it may become a reward (i.e., attention, play). Punishment that causes fear or pain will lead to avoidance or conflict behaviors when people arrive
Surgery	Neutering has no effect on this behavior except to reduce male sexual mounting
Drugs	There are no indications for using drugs with this behavior problem

- the pet requires more environmental enrichment than it is getting
- the family tries to train during times when the dog is overly aroused, distracted, or stressed.

Diagnosis and prognosis

The dog jumps up on the family members or visitors. If family and visitors are consistent, there is an excellent prognosis for resolution of the problem.

Management and treatment

In order to manage this annoying behavior, it is important that everyone follow the same basic rules in training (Table 14.1).

Management of dogs that jump on people involves:

- Teaching the dog to sit for all interactions (H13)
- removing all rewards the dog receives for jumping
- rewarding desirable greeting behavior
- preventing or avoiding undesirable greetings.

Rather than trying to train the pet what not to do (i.e., jump), the focus should be on training the pet desirable greeting behaviors—standing (four on the floor), sitting, lying down, or having the dog wait on its bed or mat. To be successful,

the family will need to train these behaviors until the dog reliably learns these basic skills. One measure that may stop some dogs from jumping is to avoid eye contact during greeting. Some dogs will not jump up or, if they do, will quickly stop and move away. It is still important to focus on teaching desirable greeting behavior because, as simple as it sounds, some people are likely to continue to make eye contact and some dogs will jump regardless. Clicker training ensures immediate timing of rewards to quicken the learning process. A daily regimen that includes structured interactions (say please), play, exercise, and multiple short training sessions is important for reducing arousal.

When practicing greetings, it is best to set up situations where the dog will be successful and can learn which greeting behaviors will result in rewards. The owners should set up training sessions with family members or visitors where they can leave and immediately return so the dog gets lots of practice. The dog's level of excitement during these short departures should be kept to a minimum. During the greeting, the family member or visitor should remain low-key and refrain from giving the pet attention or eye contact. This will make the dog less likely to jump up. The family needs to decide what behaviors they want the dog to learn at greetings and to identify any rewards the dog is getting for jumping up so that these might be removed. The visitor should be told not to give any attention to the dog until it



Figure 14.1 A leash can be used to prevent jumping up during greeting.

is in the desired position. Attention includes eye contact, touching (even to push the dog away), or talking to the pet. If the pet starts to jump, the visitor should stand up straight and turn sideways, keeping the pet in her peripheral vision but removing all attention. When the dog has resumed the desired behavior the visitor can calmly stroke the pet and give a treat. The owner should continually give small treats as long as the pet maintains the desired behavior. After a few moments of success the owner and dog should walk away. Then the exercise is repeated. Praise the dog using a calm voice when it approaches and keeps its paws on the ground or rear end on the floor. All treats should be offered at the pet's nose level directly in front of its mouth. If treats are offered above the pet's nose level or out of reach, this will encourage it to jump or move to get the treat, which is contrary to the purpose of the training session. A leash can be used to ensure that the dog stays on the floor in a sit position rather than jumping up to greet. A desirable sit response can then be reinforced. Under no circumstances should family members give the pet any attention for jumping up, including games that involve jumping up (Figure 14.1).

When any dog begins to jump up, the best option is quickly to turn or move away until the dog's feet or rear end are back on the floor. If the dog does not know the command for the desired behavior, a treat can be used to lure the dog into position. Timing is a crucial element of any training session. For the dog to pair the reward with the behavior, the reward should ideally be given while the dog is engaged in the behavior (which is why clicker training is so handy). With effective timing, removing rewards for jumping, and immediately rewarding the desired behavior, the pet will learn what to do. Of course, once the dog has learned to stand, sit, or lie down on cue, this will speed the process as the owner can ask the dog for the behavior and immediately reward the dog's correct response. Sometimes

avoiding and turning away may not be practical, especially when the pet is overly excited or the visitor is unsteady on his or her feet. The use of a head halter can be an effective way to prevent jumping and lead the dog into a calm sit, which can then be rewarded (see Figures 4.18–4.20). Should the pet begin to jump, the owner can pull forward in line with the dog's nose and up on the leash at the same time, which will bring the dog's nose up, causing it to sit. Immediate release of tension (negative reinforcement) along with praise or a treat (positive reinforcement) should be given for sitting.

Another option is for the pet to go to a mat, bed, or crate and to use this command when people arrive. The Manners Minder can be particularly useful to train dogs to lie on a mat since it delivers treats by remote control (see Figure 7.5). The device should be set up at the pet's resting area and the dog trained to go to the area and settle for treats. The mat command can then be used when people arrive or to quiet barking dogs (see below) since the treats can be released remotely with immediate timing when the pet is lying at the site. Proper greeting behavior must also be taught when releasing the dog from its crate or confinement area. Make sure the dog sits and give a treat before release. If necessary, attach a leash or leash and head halter so that the dog leaves the room calmly and under control.

Once the pet has learned the greeting behavior that earns rewards and jumping results in no rewards, the jumping behavior will stop. Punitive or painful corrections such as hitting, a knee to the chest, stepping on feet, pinch collars, or pinning are not appropriate (see Box 14.1, client handout #24, printable version available online, Appendix C, form C.4, client handout #2, and Box 7.2, client handout #23, printable version available online).

Prevention

Jumping up can be prevented by encouraging owners to use reward-based training to teach desired greeting behaviors as early as 8 weeks of age, and ensuring that attention is not given until the puppy greets properly. Success can be achieved by using high-value rewards, head halter training, and avoiding overenthusiastic greetings.

Owners should follow these basic rules:

- Attend training classes early with the puppy.
- Always ask the dog to sit (or wait for it to sit) every time it approaches someone for attention.
- Instruct people who want to meet the dog to wait for the owner's OK and be prepared to break off the greeting if the pet starts to jump.
- Never reward the pet when it jumps. Avoid lifting, giving food, play, touch, or eye contact if the pet starts to jump.
- Reward the pet each time it approaches and does not jump. Consider having a toy or treat handy to lure it into position before jumping begins.
- Once the pet has learned to sit on command, use the command during all greetings.
- Use a head halter to prevent jumping up if ignoring the pet is impractical.
- Make sure all family members and visitors abide by the same rules.

Box 14.1 Unruly behaviors in dogs (client handout #24, printable version available online)**Jumping up**

1. Whenever the young pet walks up to a person, it should not get attention or rewards of any type unless it sits (say please) H13 on web.
2. The key to changing any behavior is consistency and timing. Jumping up on people should not be allowed at any time. Appropriate behavior should be calmly and immediately rewarded.
3. Avoid accidentally encouraging or rewarding unwanted behavior. Any attention, including eye contact and even discipline, can reinforce behavior by giving attention.
4. Train your dog to exhibit an acceptable response at greetings. You can use “sit,” “down,” or “go to mat” commands when people enter the home. Encourage and reward the desired response.
5. If the pet begins to jump up, immediately stop eye contact and turn away. Interrupting the behavior with a “no” or “tssk” might stop the jumping but should not be used if it causes fear or avoidance. A head halter with leash left attached is a more effective way to interrupt jumping immediately and get a successful sit.
6. If your pet has already been inadvertently rewarded for jumping on visitors, you will need to set up training sessions with a series of repeated greetings.
 - (a) Ask a friend or family member to knock or ring the doorbell. Instruct the person to avoid eye contact, touching, or talking to the pet when the door is opened until the pet is in the desired position for greeting, e.g., sitting, lying down.
 - (b) If the pet knows commands, ask for the desired behavior. Otherwise, lure the dog into position with a toy or treat, or leave a leash and head halter attached to get an immediate and successful sit. If the dog remains sitting, the person can lightly stroke the dog while continuing to give treats.
 - (c) Completely ignore the pet if it jumps up. Get the pet back into the desired position (by command, lure, or head halter) and have the visitor try additional low-key greetings until successful.
 - (d) Ask the person to leave and repeat the entrance and greeting.
 - (g) All family members should be consistent about rewarding desirable behavior and avoiding any attention for jumping.

Getting on the furniture or into rooms where the dog is not allowed

1. Once rules are established regarding what the pet is allowed to do, all family members must consistently follow the rules.

2. Desirable behavior should be encouraged and reinforced. Provide acceptable locations for your pet to sleep and play with its toys. Reward and encourage use of these areas.
3. If you are sitting on furniture and the pet approaches, ask it to sit. Give it a toy to keep it occupied while it remains on the floor.
4. If you are supervising and your pet attempts to get onto the furniture or into an off-limits room, it must be interrupted or deterred as soon as the behavior begins.
5. Physical punishment should be avoided. Rather, an immediate unpleasant disruption such as a verbal “no” or “off” or a noise (such as a shake can, ultrasonic or audible alarm) can be used, provided it stops the behavior without causing fear. Leaving a leash attached to the dog’s head halter or harness can immediately stop the behavior with a properly timed pull.
6. Whenever you cannot supervise, your dog must be prevented from getting on the furniture or going into rooms that are out of bounds. The easiest way to do this is to confine the pet by using baby gates or confining to a crate, pen, or room. Booby traps such as motion-activated sprays and alarms, spray collars that are activated when the pet goes near the “transmitter” device, and alarm mats may deter some pets.

Raiding garbage or stealing food

1. Training the dog to stay away from garbage cans or food that has been left on a table or counter may be extremely difficult if the dog is highly food-motivated and the area is accessible.
2. If you are available to supervise your dog, you can prevent access to the food or garbage by using a sharp “leave it” command as it approaches the food or garbage. Leaving a long leash attached to the dog’s harness or head halter provides a means of physical prevention which can immediately follow the “leave it” command if the dog does not walk away.
3. If your dog has previously stolen food from the trash or off the counter or table, the high-value reward the pet has received will encourage further attempts. Therefore when you cannot supervise, the best advice is to keep food or garbage out of the pet’s reach, or in inaccessible areas and dog-proofed containers. Safe confinement can be used to keep the pet away from food and garbage. Booby traps (mentioned above) or bitter-tasting repellents can also be used to keep pets away from areas, but if food is involved the potential benefit to the pet may be too strong to overcome with avoidance training.
4. Be sure the pet is receiving adequate amounts of food each day so it is not hungry. If it is too lean, increase the amount that is fed. If the pet’s weight is normal, switch to a low-calorie diet so the volume can be increased.

CASE EXAMPLE

Lucy, an 8-month-old spayed female Irish setter, would jump on the owners and visitors when they came into the home. The owners reprimanded Lucy verbally and when that was unsuccessful, they kneed Lucy in the chest. Despite these and even more physical techniques, such as toe pinching, the problem escalated.

Lucy enjoyed greeting people and, as a young puppy, was rewarded for enthusiastic greetings. As Lucy grew, the owners attempted to stop the behavior by punishing her verbally and then physically but as the corrections escalated, Lucy habituated to the reprimands and physical contact. In fact, the punishment was actually rewarding the behavior because Lucy enjoyed the rough handling (play) and attention.

The owners were instructed to work on reward-based training techniques during nongreeting times. They were taught how to train

Lucy to sit and lie down on command. The sit–stays were gradually extended to 10 seconds before the reward was given. Since Lucy enjoyed playing with her ball, the sit training was practiced each time she was given the ball. Whenever Lucy greeted the owner or visitors, the ball could then be used to reward sitting. When the owners entered the home, if Lucy did not immediately respond to a “sit” or “down” command, they ignored her completely until she was sitting. The owner used a 3-meter (10-foot) leash and head halter, so that when visitors arrived Lucy was physically prevented from jumping on the visitors and guided into the sit position if she didn’t sit when asked. As soon as Lucy sat, the owners or guests could begin to play ball with her. Numerous trial departures and arrivals were repeated with Lucy wearing the head halter with the leash attached until Lucy began to approach the owners to play ball when visitors arrived at the door.

Stealing, getting into trash containers, and jumping on furniture

Dogs engage in these behaviors as part of normal investigative, exploratory, and scavenging behavior and because they are self-gratifying. Attempts at correction often fail because, instead of focusing on providing alternative outlets that are appealing to the pet, many owners resort to punishing undesirable behavior, sometimes long after the behavior is finished. Owners are often certain that their pets know they have misbehaved. Dogs are just better at reading human body language than humans are at reading dog body language. When a pet appears to look guilty, it is merely using species-specific submissive behaviors (appeasement behaviors) in an attempt to avoid the punishment that they know is coming by the way the owner acts. Some pets also learn in which situations they get punished, such as when the owner arrives home and trash is on the ground. Unfortunately for the owners, the dog also learns there are no unpleasant consequences if the owners are not watching. For a client review of correction techniques, see [Box 14.1](#) (client handout #24, printable version available online).

Diagnosis and prognosis

The dog engages in one or more of these activities. For most situations, the prognosis is good for prevention and management but not necessarily resolution. These behaviors are typically young-pet behaviors and may decrease or stop as the pet grows older.

Management and treatment

Stealing

Encouraging the pet to chew on items that are acceptable to the owner and appealing to the pet is the first course of action. The pet should have a variety of interesting toys available, and should frequently receive lavish social rewards for chewing on them. Finding toys that appeal to the pet, rotating through toys to maintain novelty, and adding food stuffing or coatings can help to encourage and maintain interest in chew and feeding toys (see [Chapters 4, 10, and 16](#) for details). Dogs should not be given discarded owner possessions (e.g., old shoes) as playthings, as this makes it difficult for the pet to distinguish between household possessions and chew toys. The family should provide regular sessions of play, exercise, training, and attention to provide predictability to the pet's daily routine and ensure that its needs are being met.

With supervision, it should be possible to keep the pet engaged in acceptable activities and prevent the pet from sneaking off to explore and scavenge. Keeping a long leash attached to a head halter can be particularly effective for keeping the dog in sight and interrupting the dog before items are mouthed or grabbed. Stealing can also be prevented by confining pets away from areas where problems might arise and safeguarding valuables by keeping them in pet-proof containers or cupboards. If the pet is found chewing on a household item, the owner should refrain from trying to wrestle the forbidden item from the pet (which could become a game for the pet) and instead trade

the item the pet has for one it values more. The pet can then be directed to suitable toys and chews. The pet's repertoire of commands should include "leave it" and "drop" commands that are easily taught by teaching the pet to give up items for even higher-value rewards. Harsh correction, prolonged scolding, delayed punishment, and physical punishment are not appropriate. Booby traps such as motion-activated alarms or sprays or aversive-tasting substances placed on items that might be chewed can also be used to teach a pet that stealing has unpleasant consequences ([Box 7.1](#), client handout #21, printable version available online). To teach the pet to avoid found objects, the family should spray several objects the pet is likely to chew. The objects should frequently be moved to different areas around the home. The objects should be resprayed as needed and every 2 weeks the objects should change.

Getting into trash

Dogs may raid trash bins and food cupboards if attracted by odor, taste, or texture. Some of these items can be dangerous if swallowed (i.e., plastic, cooked bones, corn cobs, peach pits) or may have bacterial contamination. Although these problems are generally related to normal exploration and scavenging, the dog should first be assessed to ensure that it is not underweight or underfed, that its diet is nutritionally balanced, and that there are no underlying medical problems that increase appetite or induce pica (see [Chapter 6](#)). Dogs that are on a calorie-restricted diet for weight control may begin to scavenge more intensely. For these dogs, owners should be advised to use food-dispensing and food-filled toys instead of feeding from a food bowl. Higher-bulk diets may help to satiate the pet better while dental chews and dental diets can provide additional outlets for chewing (see [Chapters 4, 10, and 16](#)). A daily routine of exercise, training, and social play before departures should help calm the pet and reduce exploratory behavior while the family is out. When the family departs, meals can be provided in several dispensing toys. This provides the dog with an opportunity to "scavenge" for its meals and prolongs the time spent in feeding while the owner is away. However, until the dog can be trusted not to get into trash, the best solution is to modify the environment to prevent access to problem areas. This can be achieved with baby gates or X-pens opened wide to block access to rooms, by using secure containers for food and by placing the trash in a location the pet cannot access. If the pet is caught in the act, a remote-control spray collar may teach the pet to avoid the area. Another option is to place a motion-activated alarm or air spray on the trash container, or use bitter or hot sprays. When the appeal is strong enough and the end result sufficiently rewarding, booby traps may prove to be ineffective.

Getting on furniture

This is another situation where consistency is very important. If the family decides that the pet should not be allowed on furniture, then no exceptions can be made. First, the family should choose a suitable resting location (dog bed, crate, carpet remnant) that appeals to the dog. Use of the area can be encouraged by placing favored toys and chews in the area and rewarding with treats or attention when using

the area. If a family member wants to have the pet in his lap, the person should get on the floor with the pet. The pet should constantly be supervised by the family to prevent use of the furniture.

Keeping the pet off furniture when the owner is not around generally requires a preventive strategy until the dog can be trusted. Doors should be closed or the pet confined to an area where it cannot access the furniture. A less appealing covering (e.g., upside-down plastic carpet runners) or motion-activated alarms will keep most pets off the furniture as long as they have an acceptable alternative place to rest (Box 7.1, client handout #21, printable version available online).

Prevention

These problems can be prevented by providing pets with the necessary amounts of physical and mental stimulation, and supervising to encourage desirable behaviors and discourage undesirable behaviors. The family must focus on training the pet which objects are acceptable to chew and play with and where to sleep rather than punishing unacceptable behaviors. When the family cannot supervise, the pet must be prevented from gaining access to areas where problems might arise. While confinement training young dogs generally works best, blocking entry to problem areas, or using

CASE EXAMPLE

Gilligan, a 2-year-old male standard poodle, demonstrated exploratory, playful, and destructive behaviors that persisted into adulthood, and whenever he was left alone or unsupervised he went into rooms where he would steal food off tables, raid rubbish bins, climb onto furniture, and chew on the upholstery. Gilligan enjoyed playing with family members and other dogs and was kept confined to his family's half-acre (0.2-hectare) property with a citronella spray "fencing" unit. The owners attempted to confine Gilligan to a cage but this resulted in extreme howling, salivating, and chewing at the bars, so confinement proved to be impractical. Many of the potential problem areas could be closed off, but a few of the rooms had no physical way of blocking entry.

The owners were advised to focus on providing additional enrichment to meet Gilligan's needs better, including regular vigorous play and exercise sessions at least twice a day followed by reward-based training to teach Gilligan to settle on command. Because Gilligan enjoyed playing with other dogs, he was given a play session with the neighbors' dogs every morning before the family departed for work. Although obtaining a second compatible, playful dog for the household may have helped, the family was concerned another dog might add to their problems. When the owners departed, all except for the dining room and kitchen were closed off. Child locks were placed on the kitchen cupboards and rubbish was placed in the garage before the family departed. Two or three toys with treats (meat, peanut butter) hidden inside (one which was frozen overnight) and a few different feeding toys with his kibble inside were provided each time the family had to leave home. Gilligan's problems were dramatically decreased, but his explorations into the dining room occasionally led to destruction. Since motion detectors and other forms of booby traps had not been successful, the owner placed a child gate in front of the dining room, with an indoor transmitter dish which activated Gilligan's spray collar (that was being used for outdoor confinement) whenever he approached the gate. Gilligan quickly learned to stay away from the dining room.

child locks, baby gates, or tie downs are alternative ways of preventing undesirable behaviors. As an adjunct to other forms of behavior therapy, short-term use of basket-type muzzles may be useful for dogs that might need to be placed in environments where problems (e.g., stealing, destruction) might occur.

Pulling/forging ahead and lunging on lead

Many dogs lunge ahead on their leash and pull their owners during a walk. These behaviors are not a pleasurable experience for the owners and are potentially unsafe. Both will enjoy the walk more if the dog correctly maintains its position next to the owner during the walk.

Diagnosis and prognosis

The dog leads the way on walks, not the owner. In many cases, the problem persists even if the owner uses a choke or prong collar. Fortunately, there is a good prognosis for correction.

Management and treatment

Lunging and pulling on the leash are much easier to prevent than to treat, but can be improved effectively with training and proper equipment. The guidance of a good trainer can help the owner teach the dog how to walk on lead without pulling. The owner must be prepared for a few slow and steady training sessions where the dog is taught that walking forward is a reward that can only be achieved if the leash remains loose. Training should begin at the front door. If the dog rushes forward the owner must immediately stop walking and wait for the dog to come back to her, causing slack in the leash. The walk can then continue as long as the owner immediately stops when the dog begins to pull. The dog should soon learn that the only way to go forward is to maintain slack in the lead. The owner can take a more proactive approach by having the dog sit intermittently for rewards throughout the walk (especially at curbs and crossings) and vary the speed and direction of the walk. In situations where the dog has already learned to pull, it can be helpful to use a head halter instead of a traditional collar. These collars allow the owner to control where the head goes and where the dog goes. When walking the dog with the head halter, the owner should maintain a small amount of slack. If the dog tries to pull forward, the owner can stop and wait till the dog returns, can gently pull the dog back to where there is a small amount of slack, or turn and walk in the opposite direction so that the dog only moves forward again when the leash is slack. For most dogs, walking is its own reward but adding small food rewards for heeling enhances learning. When recommending head halters to owners, it is important they are taught how to use them (see Chapter 4, abronline.org, Appendix C, form C.4, client handout #2 and Box 7.1, client handout #21, printable version available online).

Other harness-like devices deter pulling and lunging by means of straps that apply pressure to the axillary areas when the pet forges forward. These harnesses may be successful at physically deterring pulling but care should be taken to fit



Figure 14.2 Easy Walk body harness (note the dog is controlled from the front of the chest). (Courtesy of Premier Pet Products.)

the harness properly and the dog checked to be sure the axillary areas are not being abraded. Traditional harnesses where the leash attaches at the top and back of the harness are a good option for dogs that don't pull since they avoid pressure on the neck or trachea. However, more recently harnesses intended to control pulling have been designed so the leash is attached front and center on the chest. This allows the owner to stop or turn the dog with ease (Figure 14.2).

Prevention

Lunging and pulling on the lead are effectively prevented by teaching dogs when they are young that the walk will only progress forward if the leash remains loose. Rewards such as food and toys can be used to encourage and reinforce walking by the owner's side (heeling). Head halters and front control harnesses are very useful for dogs that pull and lunge.

CASE EXAMPLE

Fester, a 4-year-old, 50-kg male intact Rottweiler, could not be physically restrained by his 50-kg female owner. Fester threatened and lunged at male dogs and probably would have attacked if not physically restrained. The husband, who had taken Fester to obedience classes as a puppy, could physically restrain Fester on walks and could usually get him to respond to a "heel" command with a strong tug on the choke collar and harsh verbal corrections. Fester was fitted with a prong collar, which helped the male owner suppress pulling but was of no benefit for the female owner. However, Fester's aggression to male dogs escalated, since he paired the discomfort caused by the new prong collar with greeting new dogs.

Fester was retrained to the "heel" command using a head halter and food rewards by the female owner, beginning in her own yard and then progressing to short walks when there were no other dogs on the street. The owners were advised to have Fester neutered to help reduce his aggression to other male dogs, but they preferred to

CASE EXAMPLE—cont'd

wait until other options were pursued. Once Fester could successfully "heel" for both owners in dog-free environments using the head halter, he was gradually reintroduced to other dogs, by walking past them at a distance without stopping and rewarding him as he passed by. The owners also practiced walking Fester past properties where "well-behaved" dogs were fenced, and given favored treats as he walked by. The halter provided good control and Fester could be kept at heel except when an unexpected male dog approached. After neutering and continued use of the head halter, 6 months later the female owner reported that virtually all walks were enjoyable and problem-free.

Excessive barking

Barking is a normal means of canine communication. Barking may be seen in conjunction with hunting, herding, territorial defense, threat displays, fear, distress, attention seeking, care seeking, and play. Repetitive, aimless barking may be a part of canine cognitive dysfunction syndrome. Barking will increase in frequency when it is rewarded, which often happens when owners try to quiet the dog with food, play, or attention. Barking is reinforced when the perceived threat (e.g., a stranger approaching) is successfully removed (stranger retreats). Attempts at punishment, especially light scolding, may also serve to reward the behavior.

Diagnosis and prognosis

The diagnosis for any barking case is based upon the history of the problem. Attention should be given to those situations in which the problem occurs. The owner's response to the barking and the dog's response to the owner's attempts at correction are also critical issues in both the diagnosis and the prognosis. By the time the case is presented to the practitioner, the barking may have multiple contributing factors, and there may be more than one type of barking occurring. Barking can be quite difficult to correct since it is a highly innate behavior in some dogs, and often occurs in the owner's absence. Barking that occurs in the owner's presence and problems in which the stimuli can be controlled usually have a much better prognosis. Medical problems including cognitive dysfunction and sensory decline should be ruled out.

Barking categories

- Attention-getting, care-seeking, food-soliciting
- Territorial defense, protective aggression
- Conflict, fear, anxiety-induced
- Separation – lone call
- Hunting
- Herding
- Play, social situations
- Group-facilitated behavior
- Learned/conditioned
- Medical, e.g., cognitive dysfunction, discomfort.

Table 14.2 Management and treatment of barking

Step	Comments
Treatment based on diagnosis	After determining why the dog is barking, a specific treatment program can be implemented for the problem (e.g., separation anxiety, territorial aggression, compulsive – see appropriate sections in the text)
Identify stimuli	Determine all stimuli that lead to barking so that exposure can be prevented or the pet's response to the stimulus altered
Avoid access to stimuli	Prevent access to the stimuli by closing drapes, confining, installing privacy fence, denying access to rooms where passersby can be seen, etc.
Alter owner response	The owners must avoid doing anything that might reinforce vocalization (e.g., giving attention, treats) or that might increase the pet's anxiety, such as verbal discipline or physical punishment
Train quiet command	Teach the dog to settle and quiet on command (see client handout 1; Box 14.2)
Desensitize and countercondition	Identify all stimuli that lead to vocalization and develop a gradient for presentation, either by starting at a distance or in a different room, or by muting the stimulus so that it is less intense. Use favored rewards to ensure a calm, positive response during exposure to the stimulus
Reward quiet behavior	The owner should constantly look for quiet behavior and use high-value rewards to reinforce
Response substitution – differential reinforcement	Train and reward acceptable alternative behaviors. For example, train the dog to “get a toy” since it cannot bark and carry the toy at the same time. Keep the dog quiet by continuing play. Another option is to teach the pet to go to its bed or mat for a special treat or chew
Head halter training	A head halter can be used to reorient the head away from the stimulus, and prompt the dog into a “sit” with its mouth closed. As soon as the pet is quiet, the leash is relaxed (negative reinforcement) and positive reinforcement (treats, toy, play) given if the pet remains quiet
Bark control devices	Handheld devices that emit a loud audible or ultrasonic noise can be used by the owners, or bark-activated alarms, sprays, and spray collars may be an option if they successfully stop the barking and do not cause fear. As soon as the barking ceases the owner should use high-value rewards as long as the dog remains quiet
Surgery	Debarking surgery may reduce the volume of the bark but some level of vocalization may continue since it does not address the underlying cause. Regrowth and resumption of louder barking may occur. Debarking is considered inhumane and may be illegal in some countries
Drugs	Drugs may be indicated for barking related to compulsive disorders or anxiety

Management and treatment

Behavioral modification is based on the following (Table 14.2):

- Identify and eliminate the cause by controlling or avoiding stimuli that elicit barking.
- Treat underlying problems (e.g., separation anxiety, confinement anxiety).
- Remove reinforcing factors.
- Reward quiet behavior.
- Use desensitization and counterconditioning to change the response to stimuli.
- Carry out timely interruptions or punishment to achieve the quiet response.

While barking can be controlled by training the dog to quiet or settle on command, this approach is only effective when the dog barks in the owner's presence. With punishment the dog may learn to inhibit the barking in the presence of the owner, but is likely to continue in the owner's absence and the motivation to bark has not been altered. On the other hand, when techniques that interrupt barking are combined with reinforcement of quiet behavior, a decrease in barking may occur which can extend to when the owner is absent.

In one study, the use of a punishment device (a water hose) quickly reduced fence barking, but over a 3-month period, 86% of dogs resumed. When a bark-activated citronella collar was used to disrupt barking and play was given as a reward as soon as the dog quieted, only 4% of fence barking recurred over 90 days.¹

Depending on the dog's level of motivation and the intensity of the stimulus, some owner-absent problems can be reduced using bark-activated products such as the bark-activated spray collar, although the presence of the owners also provides an opportunity to reinforce the dog when quiet.² Devices intended to interrupt barking may act as a punisher, may act to interrupt the behavior (allowing for a window of opportunity for retraining), may have no effect on some dogs, and could actually increase anxiety in some dogs. Some products are designed to sit on a counter or attach to a wall or fence for dogs that bark in specific areas such as by the front door or in their cages. Bark-activated products that attach to the dog's collar are particularly useful for the pet that does not bark in specific areas. In one study, barking decreased in 88.9% of cases with the citronella spray collar, but in only 50% of cases with a bark-activated shock collar.³ In a study of 41 barking dogs at two veterinary hospitals, 77% of dogs wearing a citronella spray

Box 14.2 Training quiet (handout #1, printable version available online)**Training the “quiet” command**

1. Training a dog to be quiet on command requires that you anticipate when the dog will bark (e.g., children playing, knocking at the door) or that you can provoke the dog to bark. Quiet training is unlikely to be effective if you begin your training when the barking is highly motivated or intense.
2. First, attempt to use a verbal command to which your dog has been trained to get a behavior, such as “come,” “sit,” or “lie down.” Use high-level rewards to reinforce the behavior if the dog is quiet.
3. If the dog does not respond to your command, interrupt the barking with a sharp noise (loud enough to startle the pet mildly without causing anxiety). As the dog stops barking, immediately say “yes” (or use a clicker) to mark the quiet behavior and then give a small tasty food reward. Repeat this step until the dog quiets reliably for rewards. Once this happens, add the word “quiet” just before the sharp noise.
4. Eventually, the word “quiet” without the noise should successfully stop the barking.
5. Another alternative is to have the dog wear a head collar with a leash attached. When the dog is barking, say “quiet” and immediately pull out and up on the leash to close the dog’s mouth. Release the pressure on the leash as soon as the dog is quiet and give favored treats as long as the dog remains quiet.
2. When the dog is barking do not give any attention or any form of reward until it is quiet. Mild attempts to discourage the barking may reinforce the behavior by giving the dog attention.
3. If barking cannot be successfully stopped with quiet command training, it should be ignored until the dog is quiet, and then that quiet behavior immediately reinforced.
4. Verbal corrections, yelling, punishment, or your own anxious behavior may further aggravate your dog’s barking and anxiety.
5. Use of a bark-activated device (audible alarm, citronella spray, bark-activated collar) may inhibit barking in some dogs. Once the barking stops, you should wait for 5–10 seconds of quiet behavior and give a treat, toy, or play to reward the quiet behavior and keep the dog distracted.
6. Avoid leaving dogs outdoors unsupervised if they have barking problems. The dog may be motivated to bark by passing stimuli (other dogs, strangers) or may bark to attract your attention. Going out to the dog will serve to reinforce the barking behavior. Unless you are present when the dog is barking you cannot train quiet behaviors.

Anxiety-induced barking

When barking arises out of anxiety, the first step is to seek help as to how to reduce the anxiety. Simply attempting to stop the barking is unlikely to be successful unless the underlying motivation for the barking is addressed and treated.

Encouraging quiet behavior

1. Watch your dog for calm, quiet behaviors and provide attention, affection, play, or food as rewards.

collar and about 59% of dogs wearing a scentless spray collar had a significant reduction in barking in a veterinary hospital setting.⁴ However, before employing any antibark device, it is imperative that the cause of the barking is determined and steps taken to correct the problem. If punishment is used when a dog’s barking is due to anxiety or fear, an increase in barking may occur or the barking may decrease but the dog’s anxiety may exhibit in other ways, such as spinning or self-traumatic behaviors. The management of barking related to separation anxiety is discussed in [Chapter 12](#). Further discussion of behavior products can be found in [Box 7.1](#), client handout #21, printable version available online.

Training the “quiet” command

The goal is to train the dog to quiet or settle when it barks. Start with a treat bag filled with high-value treats and a device that will make a sharp or novel noise (shake can, whistle, duck call, air horn) that will barely make the pet startle without causing fear or avoidance. Whenever the dog barks, say “quiet.” If the dog stops, call it and ask it to sit/stay for a treat. If the dog ignores the command, use the noise device to interrupt the barking, call the dog, and ask it to sit (no treat). The whole family should consistently respond the same way. In time, the pet will learn that if it hears the cue word, “quiet,” and barks, it will hear

something it doesn’t like, but if it quiets and goes to a family member, it will receive a treat. This technique should be effective at allowing owners to be able to control vocalization to stop excessive or prolonged barking. It allows the dog to bark when it wants, but gives the family control over stopping it. Another technique is to use a head halter and leash to interrupt the barking instead of a noise. The owner gives the command to be quiet, and then pulls the leash to close the mouth. The tension is released when barking stops. Owners should be advised of the importance of immediately releasing the tension on the lead for quiet behavior (negative reinforcement) ([Fig. 4.18](#)) (see [Box 14.2](#), client handout #1, printable version available online).

Prevention

- The owner must never reward barking (e.g., by giving attention, food, play) and must not go to a barking or crying puppy (unless the puppy is in distress), as this only serves to reinforce the behavior.
- Young dogs should be socialized and habituated to sounds, situations, and people that otherwise might initiate barking.
- Teach basic obedience training for control.
- Immediately and consistently interrupt any undesirable barking at its commencement.

CASE EXAMPLE

Mr. Ed was a 2-year-old neutered male Shetland sheepdog that barked at any person or pet who approached the property. The owners lived in a townhouse and the neighbors had lodged a complaint. The barking would continue until the person or pet was out of sight or until they came inside and Mr. Ed had a chance to greet them. The only way that the owners could stop Mr. Ed from barking was to get his tug toy and initiate play. Although the barking was primarily a territorial alert, he was not exhibiting any aggression and seemed more interested in meeting the visitor than in chasing the person away. Barking ceased when Mr. Ed was rewarded by giving him attention or when the stimulus was removed (the visitor or animal moved out of sight).

The owners began basic reward-based obedience training and Mr. Ed became much more responsive to commands; however, they were unable to interrupt the barking on command or train a “quiet” command. Mr. Ed was then head halter-trained, and whenever the owners were available to supervise, Mr. Ed wore his halter with a 3-meter (10-foot) leash attached. At the instant barking began, the owner would command “quiet” and pull on the leash, shutting his mouth, then immediately release when he became quiet. If Mr. Ed remained quiet (training began with 1 second of quiet and was eventually extended to 30 seconds), he was rewarded. Within days, Mr. Ed would stop barking on command. However, when the owners were away from home, the neighbors still complained about barking. Since there was no way to remove or reduce the stimuli successfully, and they would not be able to keep him if the barking persisted, the owners requested debarking surgery. However, they were encouraged first to try bark-activated collars. An audible and an ultrasonic antibark collar were both unsuccessful, but Mr. Ed responded immediately to the use of a citronella spray collar. Whenever Mr. Ed wore the collar, barking was suppressed.

Canine hyperactivity and unruliness

True hyperactivity disorders, also referred to as hyperkinesia or attention deficit hyperactivity disorder (ADHD), are rare in dogs. Most overactive dogs are understimulated, genetically predisposed to high levels of energy and activity (working dogs), or their unruly behaviors have been inadvertently rewarded (or all three). Problem situations are likely to occur when the need for exercise, proper social interaction, and control is neglected. Unruliness tends to be a catch-all phrase for dogs the family cannot get under control, that respond poorly to commands, and that engage in behaviors the family finds obnoxious. Some dogs with compulsive disorders (spinning, shadow chasing, tail chasing) may present for being overly active and out of control. Diagnosis and treatment of stereotypic behaviors are discussed in [Chapter 11](#).

Increased outlets for expending energy, obedience training, leash control, head halter training, and other techniques designed to give owners more control over their dogs' behaviors are required to correct these problems. However, training techniques need to be adjusted to suit the individual dog, family, and household.

Diagnosis and prognosis

Dogs with hyperactivity disorders (ADHD) may exhibit overactivity, poor attention span, lack of trainability, aggressive

displays, and failure to calm down in neutral environments. These dogs may exhibit a paradoxical response to treatment with amphetamines or methylphenidate.⁵ Unlike the central nervous system stimulation that these drugs produce in normal animals, dogs with ADHD become less active and more attentive when treated with these drugs (see [Chapter 8](#) for details on dextroamphetamine or methylphenidate testing).

When the problem is not caused by a hyperactivity disorder, the prognosis will be based on the presentation and cause of the overactivity. Those cases where the behaviors have been inadvertently rewarded by the owners can usually be improved with behavioral modification techniques, while those with an innately high energy level and insufficient outlets may be difficult or impractical to resolve. Young dogs that are playful and active may improve with maturity.

Management and treatment

Treatment of unruliness and hyperactivity must be tailored to the individual pet. Important considerations include the breed, the family's response to the dog's behavior, the environment, family social dynamics, and the amount of successful previous training.

To design an effective treatment program, it is first necessary to identify and address the motivation or underlying cause for the behavior. Increasing the amount of daily exercise and exploratory play (e.g., feeding toys) can be helpful. However, some dogs (especially working breeds) have energy levels so high that long walks or runs will not be enough. In these cases, owners might look for places where their dog can swim, get a ball-launching toy for playing fetch, and buy dog puzzle toys that require manipulation to release food or treats. Taking the dog for obedience, agility, field work, flyball, treibball, or canine freestyle (dog dancing) can help the brain learn something new and increase physical activity.

Situations that cause the pet to become exceptionally excited, like greetings or putting on a leash, should be kept low-key. If the pet has not learned basic commands, obedience training is important. Once the pet learns basic commands, sits and downs should be requested before the pet gets anything from the owners and meals should be doled out, a little at a time, as rewards for desirable behaviors. Gradually shape longer and more settled behaviors before giving the reward. Even after vigorous exercise and play, some dogs remain unsettled. Therefore, at the end of each social session (e.g., play, training, exercise, games), the owners should train the dog to go to its mat or resting area and settle. Give a food toy or stuffed or frozen-food toys to reward calm behavior and provide an alternative activity to keep the dog occupied. Attention-seeking behavior must be ignored ([Table 14.3](#)).

Prevention

Dogs, especially puppies and adolescent dogs, should be provided with a regular daily routine of play, exercise, mental stimulation, and social interaction to meet their individual needs ([Table 14.3](#) and see [Chapter 4](#)). Owners must completely ignore their dogs when exhibiting undesirable behaviors. Ignoring, walking away, shutting the door, or “time out”

Table 14.3 Management of the overactive dog

Method	Comments
Exercise and play	Provide a regular routine of play, and vigorous exercise designed to suit the dog's individual needs (e.g., retrieve, swimming, flyball, agility). Train the dog to settle and provide self-play toys after each session
Rewards	Train a settle command. Make rewards contingent on calm behavior. Gradually shape longer and calmer behaviors. Clicker training can be highly effective
Extinction	The family must stop rewarding any behavior that is excitable, unruly, or demanding. Therefore, attention, affection, play, and treats cannot be given unless the dog is calm
Negative punishment	Stopping play and ignoring, walking away, or a "time out" when the dog gets overly excited may be successful
Obedience training	Enroll the pet in puppy classes at 8 weeks of age, and adult classes at 9–12 months of age. Excitable pets may do better in low-distraction, quiet environments or with private lessons
Punishment/distraction	Punishment is seldom successful. It may be possible, in some cases, to identify a device or product that can be used to distract the dog or interrupt the behavior, so that calmness can be trained. However punishment that does not stop the behavior is likely reinforcing the behavior (attention). Bark collars may be effective if the unruly behavior is accompanied by barking
Training devices	No-pull harnesses, head halters, and long leashes are particularly useful in physically controlling, training, and calming overly exuberant or hard-to-control dogs
Drug therapy	Activity disorders (attention deficit hyperactivity disorder) in dogs are rare but may be diagnosed with a methylphenidate trial (see Chapter 8). Alternately, selegiline may be a consideration as the effects of 2PE and enhanced catecholamine transmission may lead to a paradoxical inhibitory effect. Drugs may be useful for overactive and overly exuberant pets if there appears to be an anxiety component or impulse dyscontrol, in which case a selective serotonin reuptake inhibitor or tricyclic antidepressant might be a consideration

is preferable to providing attention. Rewards (play, food, attention) should only be given for calmness and obedience. Since immediately providing a play period or exercise when the pet is unruly may reward the behavior, it is best to initiate play and exercise when the dog is calm or playing with its toys and before attention-seeking behaviors begin. If the unruly behavior begins, give a command or use a leash and head halter to calm the dog and, once settled, attention, play, and exercise can be provided.

CASE EXAMPLE

Dennis was an 11-month-old, 4-kg toy poodle who would not calm down. He would jump from the ground into his owner's arms when he wanted attention. The owner complied by patting Dennis, carrying him around, or giving treats. During the behavior consultation, Dennis was placed on the floor, which resulted in him barking excessively, running back and forth to the door, and jumping onto the owner's lap. The owner was advised to ignore Dennis (no eye contact) and a 3-meter (10-foot) leash was left attached to his body harness. Each time Dennis tried to jump on the owner's lap or began to bark, a tug on the leash or an ultrasonic deterrent was used to deter the behavior. After 30 minutes, Dennis lay down by the owner's feet, relaxed, and slept lightly for the final 30 minutes of the consultation.

Withdrawing all attention and rewards for demanding and excitable behavior, as well as using timely interruptions, was successful in controlling Dennis's unruly behavior. At home, the owner left a long leash attached to a head halter, continued to ignore all demanding behaviors, and used the device to deter Dennis. A daily schedule with increased play and exercise was introduced, but only when Dennis was calm and not soliciting. Since Dennis was too distracted and excited in training classes, the owners arranged for private sessions in their home. Dennis became far less demanding and improved considerably but remained a high-energy, excitable dog.

Nocturnal activity

Medical differentials for behavior problems are discussed in [Chapter 6](#) and altered sleep–wake cycles associated with cognitive dysfunction are discussed in [Chapter 13](#). Assuming there are no underlying medical causes, the behavior program will need to be designed to address the underlying reason for the dog's night waking (fear, anxiety, schedule change, outdoor stimuli). Increasing daytime and evening play and activity, altering the feeding schedule, developing a secure and comfortable nighttime sleep area, and ensuring the owner does not reinforce the behavior are the basics of treatment. Drugs such as benzodiazepines (see [Chapter 8](#)), and natural products, including melatonin (see [Chapter 9](#)), might be needed to help improve quality of sleep and reduce underlying anxiety.

Undesirable sexual behavior

Reproductive behavior is beyond the scope of this text. However, there are a number of undesirable sexual behaviors, including marking and mounting, that owners seek to modify. Neutering will reduce most roaming, marking, mounting, and perhaps some intermale aggression⁶ (see [Chapter 1](#)).

Diagnosis

Before behavioral issues can be addressed, the diagnosis first involves ruling out medical problems and determining whether neutering is an option. If it is uncertain whether a pet has been entirely neutered (e.g., retained testicles) and

baseline testosterone levels are not diagnostic, testosterone levels should be measured before and 90 minutes following an injection of gonadotropin-releasing hormone (GnRH: 2.2 µg/kg IM).⁷ For older dogs, GnRH can be given daily for 4 days and testosterone levels tested 90 minutes after the injection on the fourth day. For dogs mounting other dogs, be certain to assess the medical health of both dogs as odor and pheromone changes associated with endocrine diseases, ear infections, anal sacculitis, and cystitis may be factors.

Management and treatment

The sequence of events and the family's response to the problem should be assessed. Inciting factors might be

avoided or the pet redirected to an appropriate acceptable behavior, while any owner reinforcement must cease. Prevention is often the most practical option, and supervision with a leash and head halter can effectively interrupt most undesirable behaviors and achieve desirable behaviors which can then be reinforced. For masturbation and mounting of other pets, the problem may be allowed to continue if it is doing no harm or the pet directed to an alternative acceptable outlet. For marking, see [Chapter 18](#). For anxiety-related disorders, drug or natural products might be useful. For intact males, drugs that reduce testosterone ([Chapter 8](#)) might be useful. Progestins might reduce sexual behaviors in neutered males but the risk of side-effects generally outweighs potential benefits.

References

1. Pageat P, Tessier Y. Disruptive stimulus: definition and application in behavior therapy. In: Proceedings of the first international conference of veterinary behavioral medicine. UK: Universities Federation for Animal Welfare, Potter's Bar; 1997. p. 187.
2. Wells D. The effectiveness of a citronella spray collar in reducing certain forms of barking in dogs. *Appl Anim Behav Sci* 2001;73:299–309.
3. Juarbe-Diaz SV, Houpt KA. Comparison of two antibarking collars for treatment of nuisance barking. *J Am Anim Hosp Assoc* 1996;5:231–5.
4. Moffat KM, Landsberg GM, Beaudet R. Effectiveness and comparison of both a citronella and scentless spray bark collar for the control of barking in a veterinary hospital setting. *J Am Anim Hosp Assoc* 2003;39:343–8.
5. Luescher AU. Hyperkinesis in dogs: six case reports. *Can Vet J* 1993;34:368–70.
6. Neilson J, Eckstein RA, Hart BL. Effects of castration on problem behaviors in male dogs with reference to age and duration of behavior. *J Am Vet Med Assoc* 2007;211: 180.
7. Houpt KA. Sexual behavior problems in dogs and cats. *Vet Clin North Am Small Anim Pract* 1979;27:601–15.

Unruly behaviors, training, and management – cats

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Management and treatment of undesirable behavior should begin with an evaluation of the pet's home and lifestyle to ensure that its environment is adequately enriched and meets all of the pet's needs. Enrichment should take into consideration food, water, litter, and bedding; opportunities to climb, perch, scratch, and explore; social interactions and play with other cats and owners; prevention of undesirable behaviors; avoiding stressful interactions, including punishment; and providing the cat with sufficient control to deal with conflict and stress (see [Chapter 4](#)). With unruly behaviors the focus should be on providing sufficient outlets for social play and exploration, while preventing or ignoring those behaviors that are undesirable (rather than punishing).

Feline nocturnal activity

Cats may be sedentary throughout the day, with higher activity levels at dusk and dawn. This can cause problems in a household. Bothersome nocturnal behaviors are more common in kittens and usually decrease when the pet reaches 12–18 months of age. However, for cats that are eternally “young at heart” the behavior can continue through

adulthood. An increase in night activity or waking can also arise in older cats related to medical problems and cognitive dysfunction (see [Chapters 6](#) and [13](#)). Problems arise when the pet disturbs the owners at night.

Diagnosis and prognosis

The primary complaint is feline activity during the night that is not tolerable to the owner. Pouncing, play bites, swatting, vocalization (discussed below), and running over the bed or through the home may be bothersome for the family. The cat is usually young, active, and may not be receiving enough enrichment during the day. Cats that previously slept through the night and then develop vocalization or nighttime activity should be assessed for underlying medical problems, including cognitive dysfunction syndrome (CDS) (see [Chapter 13](#)). Other causes of increased nocturnal activity and vocalizing might be outdoor stimuli (cats and wildlife), changes in feeding schedule/hunger, environmental noises (neighbors, garage doors, garbage pickup), as well as any recent change in the household or schedule that might have disrupted the cat's schedule.

Exuberant play and pouncing behaviors have a much better prognosis in a young playful kitten and are more of

a concern if they persist into adulthood. The prognosis for improving an adult cat with increasing nocturnal activity will vary based on the cause of the problem, the temperament of the cat, medical causes and, in some cases, whether it is amenable to drug therapy.

Management

The owner should avoid giving the cat any attention that might reinforce the undesirable behavior. Scolding should be avoided since mild scolding might reinforce the behavior, while harsh scolding may weaken the bond with the pet and cause fear or avoidance. The cat may be more likely to sleep through the night if it is given a daytime enrichment program with increased social and exploratory play, including a session in the evening before the family retires for the night. Physical play can often be best stimulated by chasing prey-type objects. Toys thrown or dragged by the owners and those that can be batted along the ground or dangled work best. A second cat of the same age and temperament might provide another outlet for play behavior.

Once the cat's day is sufficiently enriched, the focus will need to be on ignoring nighttime activity to ensure it is not reinforced. Restricting the areas accessible to the cat can be helpful. This might include closing the bedroom door or confining the cat to another room or a crate during the night. Booby traps, such as a motion-activated spray, can be used to keep the pet away from particular areas where it scampers and makes noise. The cat that cannot be kept out of the bedroom during the night can be discouraged with a water gun, ultrasonic device, or the hissing sound from a can of compressed air.

If an overweight cat on a diet cries at night for food, consider switching to a high-fiber/low-calorie diet with a final feeding before bedtime. Alternately, some cats are more satiated by feeding smaller high-protein meals. The cat can be challenged to work for its food by hiding containers throughout the home or feeding food out of manipulation toys (see [Chapters 4 and 10](#)).

While it would be preferable to get the cat to sleep through the night, in some situations it might be more practical to give the cat an area of the home where the owners cannot hear the cat, that is enriched with play and feeding toys, and opportunities to climb and explore through the night. Another option is to feed the cat from a timed feeder, which can be set to open for meals at selected intervals. If the owner is no longer the source of food, attention-seeking behaviors for food should cease. Owners can then decide if a nighttime feeding should be offered. For some cats this feeding might be delayed about 10 minutes each night until the feeding time is gradually moved to morning. For nighttime waking or vocalization due to medical problems, CDS, or excessive anxiety, drug therapy might be indicated. A benzodiazepine, or antihistamine, or perhaps even a phenothiazine might help to initiate nighttime sleep in the short term.

Prevention

Providing appropriate enrichment is important for meeting the young cat's social and play requirements. Interactions that allow the pet to play with or attack body parts should be discouraged. In fact, cats seeking attention at any time

should learn that calm behaviors are successful and demanding behaviors are not. Feeding or giving any attention when the cat wakes at night must be avoided as it reinforces the behavior.

CASE EXAMPLE

Chauncey, a 14-month-old domestic short-haired cat, was presented for waking the owner during the night by running about the bed and chewing on the owner's ear lobes. The owner was instructed to increase the amount of pre-bedtime play for the cat and to place underarm deodorant on her ear lobes. The ear lobe chewing stopped and activity decreased but the cat still occasionally woke the owner by jumping on and off the bed. The owner then decided to close the door to the bedroom as prevention. The cat's behavior then moved to other areas of the home, especially the kitchen, where he would run around at night and knock objects to the floor. The owner further increased evening enrichment with chase toys, a feeding toy, and occasionally a catnip toy. Prior to bedtime she hid small piles of treats on the floor around the house under small disposable cups to encourage hunting for food. To discourage climbing on the counter the owner placed a sheet of vinyl carpet runner nubs up and on the table a motion-activated can of compressed air. Together, these various tactics finally curtailed Chauncey's objectionable nighttime behaviors.

Feline excessive vocalization

Excessive vocalization is more common in Oriental breeds but can occur in any cat. Since cats are quite active at dawn, it is not uncommon to have complaints of vocalization early in the morning. Causes might include territorial arousal, attention-seeking behavior, hunger, pain, and CDS.^{1,2}

Diagnosis and prognosis

For successful diagnosis and treatment, the cause of the cat's vocalization must be determined. Medical problems could contribute to increased vocalization, restlessness, altered sleep-wake cycles, and increased nocturnal activity, so that a medical workup should first be performed based on signalment and clinical signs. Identifying the location, stimuli that incite the cat, what precedes vocalization, and how the owner responds can help to elucidate the cause. In addition, keeping a journal of daily activities, including when and where the cat vocalizes, may help to determine the triggers for the behavior.

Except in Oriental breeds, where the behavior might be highly innate and unrelated to specific stimuli, the prognosis is moderately good for successful correction, provided the owner is able to identify and remove those factors that are initiating or reinforcing the problem.

Management

- Identify the stimulus for the cat's vocalization and reduce exposure. Blocking access to windows or putting up window coverings may prevent the cat from seeing outdoor stimuli that might incite the behavior.

Anything that might attract roaming animals (e.g., garbage bins) should be moved or removed.

- Provide for the cat's needs, including play, exploration, and exercise throughout the day and evening. Sometimes obtaining a second playful cat can provide a distraction and an additional outlet for play.
- Cats that howl for food can be fed high-bulk diets, although some cats might be more satiated by smaller high-protein diets. Feeding from manipulation toys or hiding food under cups around the home extends feeding time. Providing a meal just before bedtime might reduce the urge to seek food at night. Another alternative is to use a timed feeder which could automatically deliver an early-morning meal and teaches the pet to expect food from the feeder and not the owner.
- Identify the family's response to the cat's vocalization and remove any reinforcement (e.g., attention, affection, food, allowing outdoors).
- Quiet, undemanding behaviors should be reinforced. Consider clicker training.
- While ignoring vocalization and rewarding quiet behavior should be the focus, use of a mild interruptive stimulus (water gun, compressed air, ultrasonic device) may stop the vocalization to be able to reward quiet behavior with treats, food, or play. A verbal command to come and sit for rewards would be a preferred method to quiet the vocalization but needs first to be trained.
- A benzodiazepine, antihistamine, or perhaps phenothiazine prior to bedtime may be helpful for a few nights to help re-establish nighttime sleep. However, while phenothiazines sedate they may cause increased noise sensitivity and even increased vocalization.
- Cats with old-age-onset vocalization should be evaluated for medical causes, including pain, sensory decline, and cognitive dysfunction (see [Chapters 6 and 13](#)).

Prevention

Avoid rewarding vocalization; focus on rewarding nonvocal behavior. Provide play toys, social play, and reward training sessions during the daytime and evening to help provide the cat with sufficient attention and enrichment to help encourage nighttime sleep (see [Chapters 4, 6 and 10](#)).

Chewing, stealing, jumping on counters and climbing

Cats may engage in these behaviors because of their inquisitive and investigative natures and because they are reinforced if the pet finds food or something enjoyable on which to chew. A combination of preventive measures and providing enticing alternatives for play, exploration, and chewing is generally quite effective. However, if chewing, sucking, or ingestion of items (picas) intensifies, then the problem may be a compulsive disorder (such as wool sucking in Oriental breeds) (see [Chapter 11](#)). Attempts to use punishment are generally ineffective because, even if timed correctly, they are only likely to stop the behavior in the owner's presence and may cause the pet to become fearful of the owner. An even more common scenario is where the owners punish the behavior after it is finished. Owners may feel certain that their pets know they have done wrong when they discover the problem because the cat looks fearful or runs away when the owner approaches. However, the pet is only avoiding the situation because the presence of the owner means punishment is coming. In fact, the behavior will continue when the owner is not around because there are no unpleasant consequences.

Diagnosis and prognosis

The cat climbs or jumps on surfaces that are problematic for the owners or steals, chews, or eats items that are inappropriate for the owners (and possibly dangerous to the cat). These behaviors are seen in young pets. Providing alternative outlets and preventing further recurrence of the problem should decrease or stop the behavior in kittens and should decline further with maturity.

Management of chewing and stealing

These behaviors are not as common a problem as in dogs, but some cats will steal and sometimes cache (hide and store) rubber bands, knitting material, clothing, or child toys. These can be dangerous if ingested. Cats that have not raided food cupboards or trash bins in the past may begin to do so when they are put on a calorie-restricted diet or with medical problems causing hyperphagia (e.g., thyroid disease, diabetes mellitus). Providing the cat with even more appealing toys combined with preventive measures should be successful. Toys can be coated or stuffed with food and treats.

CASE EXAMPLE

Jethro was a 3-year-old neutered male Siamese cat that had always been excessively vocal. Whenever Jethro cried, the owners tried to determine what he might want so that they could give it to him. Since providing food was the only thing that consistently stopped vocalization, the owners assumed that he was constantly hungry. At the time of consultation, Jethro was 7 kg. He had recently been placed on a diet by the referring veterinarian and the vocalization had further escalated. Rather than buy an expensive, low-calorie prescription food, the owners had merely cut back dramatically on the amount being fed, which increased his howling. It is likely that the initial howling was typical Siamese vocalization but was reinforced by offering food.

The first step in correction was to satisfy the cat's needs by changing to a commercial calorie reduction program, in this case a

higher-bulk diet. Jethro was provided with multiple small meals of this diet whenever the owner was home, but never on demand. When the owner was out, food was not provided. When Jethro approached the owners and began to vocalize, the owners were advised to ignore or walk away and return when he was quiet. However, since the vocalization was too incessant the owners used a short burst of compressed air to interrupt the behavior. The owners were advised whenever Jethro was quiet to give a small treat and a play session or catnip to keep him occupied. Although Jethro continued to vocalize, the behavior was dramatically reduced after only a few days and would cease if the owners merely showed him the can of compressed air.

Moving toys as if they were prey may further encourage the cat to play and chase. In addition the family should review general enrichment strategies to ensure adequate social attention, play, reward training, and objects for climbing, scratching, and exploring are provided. The owners should try and identify the types of objects and locations the cat prefers so that they can offer items of a similar texture, size, or shape for play and appealing locations for the cat to climb and perch. For example, Kitty Kong has rubber whiskers that resemble rubber bands and cats that chew on wool may prefer a toy made of wool or similar material (as long as the objects are not ingested). Diets with more bulk or roughage, feeding toys, and dental diets to increase oral stimulation might also reduce chewing and stealing. Preventive measures might include cat-proofing, secure storage containers, closing doors, or confining the cat away from potential problems. If a pet is found chewing, stealing, or carrying a household item ideally it would be best if the cat were trained to drop or give on command, so that the owner could cue the cat to drop the item for a reward. If unsuccessful a sharp/novel noise or squirt from a water gun without scolding might interrupt the behavior and a reward should be given after the item is dropped; however some cats will run away without dropping the item. Punishment that is harsh, prolonged, delayed, unsuccessful, or associated only with the owners' presence should be avoided. Booby traps such as motion detector alarms or sprays or covering the surface with double-sided carpet tape may discourage cats from stealing or climbing without fear or association with the owner (see [Box 7.1](#), client handout #21, printable version available online). Commercial taste deterrents or cayenne pepper can be coated on items that the cat might steal or chew (such as blind cords, plants, computer cables, or telephone cords). Concurrently, the owner should coat the cat's toys with an appealing taste or a little catnip to accentuate the difference between what it is supposed to chew and what it is not.

Management of jumping on counters and climbing

One of the more common owner complaints is the cat that explores table tops and counters. Not only might these be interesting areas to explore, they may have odors and tastes that attract the cat. Therefore the first step is to ensure that nothing is left on the counters or table top that might be appealing to the cat (see [Figure 7.1](#)). If the family decides that the pet is not allowed on furniture or counters then all family members must consistently enforce the rules and no exceptions can be made (sofa, table, kitchen counters). The owner should first find the cat desirable alternatives for resting (bed, crate, chair), perching (window ledge), climbing (kitty condo) and exploration (paper bags, cardboard boxes). To encourage use of these areas small treats, toys, or catnip can be left in the area and the cat rewarded if the owner sees it using the area (e.g., with treats or a play toy). If a family member would like to have the pet on his lap but the cat is not allowed on furniture, the person should get on the floor and then allow the pet to climb on his lap. Another solution is to give the pet a toy stuffed with food or to start a play toy chase game as it approaches to direct the cat into a desirable behavior before it jumps on the furniture.

If the cat has access to the furniture or counter, it should be supervised by the owner so that the cat can be rewarded

Box 15.1 Dealing with cats getting on the furniture, counters, or into rooms where they are not allowed

1. Once rules are established regarding where the pet is allowed to go, and what areas are to be off limits, all family members must consistently follow the same rules.
2. Be certain to provide the cat with enrichment and outlets to satisfy its needs. Therefore before trying to stop access to an area, be sure the cat is provided with climbing, perching, exploration, play, and resting areas which can be rewarded by leaving special treats, toys, or catnip in the area to encourage use of the area. Similarly, treats should be given if the owner sees the cat using the area.
3. If the pet attempts to climb onto furniture or counters, or enter an "out of bounds" room, it should be immediately interrupted as the behavior begins. Physical punishment should be avoided. If trained, the cat can be called away for a reward. Alternately a disruptive device such as an ultrasonic alarm or water spray might be used to deter the cat. Cats trained to wear a leash and body harness can be prevented, interrupted, and trained where to go and what to avoid.
4. Make certain that there is nothing that might attract the cat to "off-limit" areas, such as food or play toys.
5. Whenever the cat cannot be supervised, it must be prevented from getting on the counter or into rooms that are out of bounds. This might be accomplished by blocking access to the area, confining the cat to a particular room or area of the house where exploration is allowed, or with crate training.
6. Consider deterrent devices such as motion-activated spray cans and alarms, unpleasant surfaces such as upside-down vinyl carpet runners, cat-repellent sprays, and bitter or hot-tasting sprays (if the cat chews items in an area).

for playing, climbing, resting, and perching in desirable areas and immediately deterred if found in an undesirable location. Keeping the pet off counters and furniture when the owner is not around requires a preventive strategy. Closing doors, blocking access to areas, or making the furniture less appealing (e.g., a plastic covering) can keep the cat away until the cat can be trusted. Another option is to decrease the appeal of the surfaces by using surface coverings that the cat finds unpleasant (e.g., upside-down carpet runners). Alternately aversive repellent or booby trap devices such as double-sided tape, motion detectors, or avoidance mats should keep most pets off the furniture (see [Box 7.1](#), handout #21, printable version available online, and [Box 15.1](#) for details).

Prevention

These problems are most common in young pets. Providing sufficient enrichment, as well as supervision and safe confinement or cat-proofing, is very important for keeping young pets out of trouble. During supervision, owners should focus on rewarding what is desirable rather than punishing what is undesirable. A leash and body harness or tie-down may help to maintain effective supervision. When the pet cannot be supervised, problems should be prevented by keeping the pet from problem areas (e.g., closing doors, child locks, baby gates, confinement) or by making the area less appealing (e.g., vinyl carpet covering with nubs up, double-sided tape). Unacceptable behaviors should calmly, immediately, and consistently be interrupted and the pet then directed to engage in appropriate behaviors and rewarded.

CASE EXAMPLE

Samantha, a 4-year-old spayed female cat, lived in a one-bedroom apartment with her 23-year-old owner. Because of her owner's concerns about cleanliness and health, Samantha was not allowed on the kitchen worktops or tables. When the owner was present, the cat had been taught to stay away from the tables and counters with a water rifle, but whenever the owner went out of the room, Samantha returned to the worktops and table. The owner was not willing to confine Samantha to the bathroom, bedroom, or a crate.

Samantha continued to climb onto the tables and worktops as part of her daily exploratory and play behaviors and because food, leftovers, or tasty spills could occasionally be found in these areas, her behavior was intermittently rewarded. The first step was to provide Samantha with a play center that consisted of scratching surfaces, a few cubby holes for hiding, and a number of ledges and platforms for climbing and perching. On the platforms and dangling from the ledges were toys and small morsels of food and treats. Samantha soon began to explore and investigate the play center regularly, but continued occasionally to wander across the table and worktops. The owner purchased a motion-activated spray can that was used to keep the cat away from the worktop when she was out, and a piece of plastic carpet runner (nubs up) was draped across the table except at meal times. The cat was never seen on the work surfaces or table top again.

Undesirable sexual behavior

Sexual and mating behavior is beyond the scope of this chapter. However, there are a number of undesirable behaviors that may have a sexual basis, with which owners may have problems. Marking, roaming, mounting, and masturbation are more frequently seen in intact males; neutering can reduce or eliminate most sexual problems (Table 7.3).^{3,4} (See Chapter 19, urine marking, for details.)

Diagnosis

The diagnosis involves ruling out underlying medical problems and behavioral causes, and determining whether neutering is an option. If it is uncertain that both testicles have been removed, testosterone levels can be measured 2–4 hours following an injection of 25 µg/cat human chorionic gonadotropin (HCG) or gonadotropin-releasing hormone

(GnRH), although barbs on the penis would be diagnostic.⁵ If increased vocalization and estrus-type behaviors are suspected in female cats, to determine whether there might be ovarian remnants, 25 µg/cat GnRH or HCG can be administered intramuscularly when the cat appears to be in heat and progesterone collected in 1 week.^{5,6} Check with a theriogenologist or endocrinologist for most current methodologies.

Treatment

The sequence of events prior to the behavior, and the owner's response to the problem, should be assessed. Stimuli and stressors that might trigger the behavior should be identified and avoided. Ensure adequate enrichment and give multiple alternate activities, including social play, reward training, feeding toys, and opportunities to climb and explore.

For mounting of household possessions and masturbation, the cat might be allowed to continue on objects that are safe and appropriate if it is doing no harm. This may be a normal behavior in some neutered male cats but anxiety and displacement behaviors are also a possible cause. For mounting of other cats, the relationship between the cats should be reviewed to determine the underlying cause and whether, in fact, the problem needs to be resolved.

Mounting of household objects might be displacement behavior arising from underlying conflict and anxiety, while mounting of other cats could lead to escalating conflict or be stressful for the mounted cat. Therefore the owners should attempt to identify and avoid inciting factors, direct the mounting cat into appropriate activities, provide alternative activities to pre-empt the behavior at the times the behavior might arise, and identify sources of stress or anxiety. As the behavior begins, the owner should try to use a reward-based command such as come, treat time, or play time (to which the cat has been trained) or consider leaving a leash and harness on the mounting cat to be able to direct it away. Disruption devices such as a water sprayer may be effective for interrupting the cat and directing it into another activity (or separating it from the other cat) but any technique that causes fear should be avoided. Feliway or drug therapy might be a consideration if the problem appears to be stress-induced.

Treatment for urine marking is discussed in Chapter 19.

References

1. Moelk M. Vocalizing in the house cat: a phenetic and functional study. *Am J Psychol* 1944;57:184–205.
2. Moffat KS, Landsberg GM. An investigation of the prevalence of clinical signs of cognitive dysfunction syndrome (CDS) in cats. *J Am Anim Hosp Assoc* 2003;39:512.
3. Hart BL, Barrett RE. Effects of castration on fighting, roaming, and urine spraying in adult male cats. *J Am Vet Med Assoc* 1973;163:290–2.
4. Hart BL, Eckstein RA. The role of gonadal hormones in the occurrence of objectionable behaviours in dogs and cats. *Appl Anim Behav Sci* 1997;52:331–4.
5. Plumb DC. *Plumb's veterinary handbook*. 7th ed. Iowa: Wiley-Blackwell, Ames; 2011.
6. Houpt KA. Sexual behavior problems in dogs and cats. *Vet Clin North Am Small Anim Pract* 1997;27:601–15.

Recommended reading

- Seksel K. Preventing behavior problems in puppies and kittens. In: Landsberg GM, Horwitz DF (eds) *Vet Clin Small Anim Pract* 2008;38:971–82.
- Seksel K. 2009 Preventive behavioural medicine for cats. In: Horwitz DF, Mills DS, Heath S, editors. *BSAVA manual of canine and feline behavioural medicine*. 2nd ed. UK: BSAVA, Gloucester; pp. 75–82.

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Canine destructive behaviors

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Destructive behaviors, such as chewing, scratching, garbage raiding, and digging, can cause household damage, injure the pet, and weaken the family–pet bond. Exploratory behavior, play, and scavenging for food are all normal behaviors that can lead to destruction in the home. Dogs may be destructive, trying to get to prey, digging into furniture to retrieve a toy, chewing at doors or windows due to territorial arousal, and chewing on clothing or carpeting because of an interesting or appealing odor or taste. Some dogs dig in furniture or bedding before settling to rest, or as a part of nesting behavior.

Destructive behaviors may also be due to separation anxiety, compulsive chewing, confinement frustration, and escape behavior arising from fears and phobias. It can also be due to sucking or eating (pica) nonfood items. Some of these behaviors can arise from underlying anxiety or behavioral pathology. To determine whether destructive behavior is a normal but undesirable behavior versus an abnormal behavior and to implement an appropriate treatment plan, it is necessary to make an accurate diagnosis. The behavioral history should consider the age and breed of the pet, the targets of the destructive behavior, the family's response, and if there are specific stimuli, situations, or times in which problems arise. Video clips can often help make the diagnosis. Diagnosis and treatment of destructive behaviors related to fears and phobias, separation anxiety, and compulsive disorders are discussed in other chapters within this text.

General guidelines for enrichment for destructive behaviors

Dogs should be provided with an environment that is interesting, complex, and stimulating, that provides both physical and psychological choices. Many pets are understimulated because sufficient outlets are not available or the opportunities offered do not address their needs. Pets that are frustrated from exhibiting their normal repertoire of behaviors may engage in less desirable behaviors to help fill the void, such as chewing, barking, or displacement behaviors (circling, excessive grooming) which may progress to compulsive disorders in genetically predisposed individuals, such as acral lick dermatitis (see [Chapter 11](#)).

When not sleeping or resting, a dog's day would normally be spent in social play, and exploration with an emphasis on food acquisition (e.g., scavenging, hunting). Oral exploration can be encouraged by placing food in toys that require chewing or physical manipulation to release the food or by playing feeding games of hide and seek. Placing food in toys instead of bowl feeding can extend feeding time and provide increased enrichment (see [Figures 4.8 and 4.9](#)).

Social interaction and play with the family (tug games, fetch, hide and seek), play with other dogs, physical exercise, and reward training should be provided frequently. More challenging activities such as agility, flyball, herding trials, Frisbee competition, hunting, treibball (herding large

balls), and pulling carts all provide outlets to help meet the social, physical, and mental needs of the breed or the individual.

However, even with a good repertoire of appealing toys, regular sessions of social play, physical exercise, and reward-based training, many dogs still find time to explore, chew, scavenge, or dig. Therefore to ensure safety and prevent damage to owner possessions, preventive measures will also need to be implemented. The focus should be on setting the pet up to succeed by providing, encouraging, and reinforcing behaviors that are desirable while preventing behaviors that are undesirable. Destructive behavior can be prevented by dog-proofing areas, preventing access to areas where it might do damage, interrupting the behavior, and directing the dog to an alternative acceptable outlet. Attaching a long lead to the pet gives the family another option for keeping the pet out of trouble. Owners who use punishment to suppress undesirable behaviors rather than encouraging and reinforcing desirable behavior may cause anxiety which can lead to further destructive behavior. In addition, owner corrections may actually be a reward for some dogs that crave attention. If it is mild and not sufficiently aversive, it can serve as social reinforcement. When supervision is not possible, the dog should be placed in a safe, destruction-proofed area with its bedding, toys, and chews. All dogs do not innately feel comfortable in small enclosed areas. Time should be taken to introduce the pet slowly to the idea of confinement in a positive manner. See confinement training handout in [Chapter 4](#) ([Box 4.11](#), client handout 5).

Destructive chewing

The primary focus for these problems should include identifying and treating any underlying behavioral pathology, and providing sufficient environmental enrichment and outlets to meet the pet's needs (see section on environmental enrichment in Chapters 4, 6 and 10). Aspects about family members and the home environment are important variables to investigate. General recommendations will apply to most dogs, but actual recommendations will vary with individual differences (age, breed, temperament, and type of problem).

Inappropriate chewing and destructiveness in young dogs can be a result of exploration, play, scavenging, hunger, teething, and attempts to escape confinement. Puppies and adolescent dogs are usually more energetic and investigative and have stronger drives for both social and object play than adult animals. The consequences of the behavior will determine whether it is repeated. For example, if the pet obtained food by chewing into a cabinet, the behavior will likely recur. Or if chewing allowed the pet to escape confinement, the behavior will occur again when the pet is confined, perhaps more intensely. Family responses can also encourage chewing. When the puppy has an object it shouldn't have and the owner gives a treat or toy to retrieve it, or chases the puppy to get it, the "stealing" behavior may be reinforced. If the consequence is unpleasant the behavior will decrease or cease. Making a sharp noise when the pet has its head in the trash can or setting an alarm to go off when the pet gets on the counter might decrease the behaviors.

Diagnosis and prognosis

Most destructive behaviors by young dogs are normal but unacceptable behaviors. Owners should be questioned about the dog's daily schedule, including the amount of exercise and training the pet receives; the amount and types of food, toys, and chews that are offered; how the pet is housed when the owner cannot supervise; and what steps have been implemented to correct the problem to date.

The cause of destructive chewing in adult dogs can be more of a challenge to diagnose and manage successfully. Some dogs, especially those that retain juvenile characteristics and dogs with the energy and stamina required in working breeds may continue to chew and scavenge as adults. Destructive behaviors that persist into adulthood may be due to reinforcement by the owner or by the behavior (i.e., the activity itself is enjoyable). Additional underlying causes in adult dogs include predation, hunger, separation anxiety, noise phobias, confinement anxiety, compulsive disorders, and territorial behavior. Although medical problems are seldom a consideration for puppy chewing, when destructive behavior first emerges in an adult pet, or when there are concurrent medical signs such as polyuria, polydipsia, polyphagia, weight loss, gastrointestinal upset, or changes in activity, medical problems should be ruled out. Dogs that lick, chew, or suck on objects in the environment and those with pica should be assessed for gastrointestinal disease.¹ Switching to a calorie-restricted diet, feeding the puppy insufficient amounts (e.g. feeding according to recommendations on the food bag rather than the pup's actual needs), and drugs that increase appetite such as corticosteroids may increase scavenging, food stealing, garbage raiding, and even pica. They may even contribute to food guarding and possessive aggression. While a basic medical workup would include a hemogram, biochemical profile, and urine, assessment for endocrine function (adrenal, thyroid), gastrointestinal disease, and exocrine pancreatic insufficiency tests may also be warranted ([Table 16.1](#)).

Variables to assess include:

- Signalment, including age and breed
- Appetite, hunger, and diet
- Recent changes in health or behavior
- How the pet responds to family absences
- How and where the pet is confined and acceptance of confinement
- Whether the behavior includes licking, sucking, or ingestion
- What is chewed
- When, where, and in what situations the behavior occurs
- Whether the chewing occurs when owners are home, absent, or both
- How the pet responds to prey
- Response to loud noises
- The response to territorial stimuli
- What the owner has done to try to stop the behavior
- The pet's daily activities.

The prognosis varies with the age, breed, and temperament of the pet, the pet's environment, family dynamics, and, especially, the underlying cause of the chewing. With proper diagnosis, training, and adequate supervision, the prognosis

Table 16.1 Causes of destructive chewing

Causes of chewing	Considerations
Exploration, play, toy retrieval	• Puppy, young adult dog • Owner possessions – novel objects
	• Edges of furniture chewed/digging where toys are hidden
	• May be texture preference, e.g., wood, leather, carpet, cables/electric cords
	• May occur when the owner is home but not supervising
Reinforced – attention seeking	• Owner attention, chase, tug, or even mild, ineffective attempts at punishment may inadvertently reinforce
Inappropriate toys or play	• Clothing, towels used for play or tug games or provided for chewing
Inadequate enrichment	• Adolescent dog – adult dogs
	• May occur when the owner away or home but not supervising
	• May be in individuals/working breeds with high activity/energy/stamina
Hunger	• May be associated with calorie-restricted diet
	• Targets food or objects with food odor
	• Rule out medical problems/drugs
Predatory behavior	• Evidence of prey animals in chewed areas
Territorial behavior	• Signs of territorial arousal
	• Signs identifiable by owners when at home
	• Curtains, furniture, woodwork near windows and doors scratched/chewed
	• May be accompanied by urine marking in area
Separation anxiety	• Occurs when the pet cannot get access to family member
	• Signs of anxiety when owner departs or cannot access owners – video or movie clips to confirm
	• Destructive chewing at exits (doors, windows) or owner possessions
	• May occur with maturity or change in family schedule
Noise phobias (storms, fireworks)	• Evidence of intense anxiety triggered by noises
	• Targets for chewing are exit or escape areas (doors, windows)
Barrier frustration/escape	• Associated with intense escape attempts from confinement
	• May be observed by owner when confining the pet
	• Chewing/damage at barriers – especially if previously escaped
Compulsive disorder	• Oral behavior, including chewing, licking, and swallowing of nonfood items, e.g., carpet, rocks, owner possessions
Medical	• When indicated by presenting signs, rule out medical problems

for complete control of most normal chewing problems by young pets is good to excellent. Destructive behaviors may take time to improve or resolve, and in some situations, may get worse before getting better. In one study, 25.5% of adopted dogs displayed destructive behavior 1 week after adoption which increased to 41% of dogs 1 month after adoption.² Chewing, sucking, licking, and pica represented 2.4% of 1644 cases of adult dogs referred to behavioral practices, indicating that some destructive behaviors might become sufficiently problematic to require referral.³

Management and treatment

For puppies and adolescent dogs, the goal is to ensure that a regular daily routine with sufficient enrichment in the form of exercise, training, and play is provided. The owner

should focus on providing appealing, durable, and time-consuming items with which to play and chew. Begin with a variety of toys to determine which the pup prefers. Good choices are those designed for food to be stuffed into the openings. This will increase the dog's level of interest in the toys and extend the length of time it spends licking and chewing. Other toys that might maintain a dog's interest include those that must be manipulated to release small pieces of food or kibble. If most of the dog's food is fed from these toys, feeding time can be longer, more challenging, and more enriching than eating from a food bowl. Toys made of durable rubber, beef hide chews, and dental treats are other good options (see Figures 4.8 and 4.9). Toys should be rotated in and out every few days to keep them interesting. When the dog is chewing its toys, it should be rewarded with affection or by tossing a small treat to it.

Until the pet focuses its chewing only on acceptable toys, it should be closely supervised to prevent or interrupt chewing on inappropriate items and confined to a dog-proofed area with chew toys when it cannot be supervised. When the pet can be trusted to have more freedom, the appeal of previously chewed items might be reduced by applying a small amount of cayenne pepper or a commercial antichew spray. Booby traps, such as motion detector alarms or sprays, may also be successful in keeping the pet away from objects it might chew. Dog-proofing might include putting objects out of reach or covering cables and cords with polyvinyl chloride plastic tubing. However, avoidance techniques are only likely to succeed if more desirable outlets for feeding and chewing (from the dog's perspective) are also available. In some situations, a basket muzzle may be used for short periods.

If hunger is a problem, management might include increasing the amount fed, switching to a higher-bulk diet, or

changing the feeding schedule to match the times the dog might chew. Trap and remove prey if this is the reason for scratching or chewing on walls or floors. For pets with anxiety disorders, behavior modification and medication may be necessary (see [Chapter 12](#)). Dogs that chew because of anxiety about confinement need to accept their confinement area positively and gradually (see [Box 4.11](#), client handout #5, printable version available online). Chewing at windows and drapes during territorial displays can be prevented by keeping the dog away from these areas when the owner is not available to supervise (confinement, blocking access, motion-activated alarms, motion detector sprays), using a leash to control the dog when in the area, and training desirable responses with rewards as people and animals go by (response substitution, desensitization, and counter-conditioning) ([Table 16.2](#) and [Box 16.1](#)).

Punishment can be used if it is timely and appropriate for the pet's temperament, but some pets will just learn to avoid

Table 16.2 Management of destructive behavior in dogs

Course of action	Comments
Outlet for normal behavior	Owners must provide opportunities for the pet to chew appropriately. Offer a wide selection until preferred toys are determined
	Provide toys that are durable (e.g., plastic, rubber), that can be filled with biscuits, dog food, raw hide, or pieces of meat or cheese. Spread cheese or peanut butter on toys. Freeze food-filled toys to lengthen their desirability
	Provide a variety of toys. Keep interest by rotating, providing novel toys, or adding new food and treats
Avoid promoting problem behavior	Owners must not give their possessions to chew or encourage play with them
Reward desirable behavior	When the pet chews or plays with one of its toys, give social or food treats to reinforce the behavior
Social enrichment	Owners should provide a regular schedule of physical activity ranging from long walks or runs to opportunities to sniff and explore
	Additional activities might also be needed for high-energy individuals and working breeds such as playing ball or Frisbee, tug games, retrieving, herding trials, flyball, and agility
	Social play with other pets
Provide mental stimulation	Toys that require manipulation to deliver food
	Obedience training to teach calm and focused behaviors (Box 7.2, handout #23, printable version available online)
	Hiding toys and treats around house or yard for pet to seek and find
Punishment	- Physical punishment must be administered during the act and appropriate for the pet's temperament - In general, physical punishment should be avoided as it can cause fear, avoidance, and aggression. It only stops the behavior in the owner's presence and may inadvertently reinforce the behavior - If properly supervised, owner remote techniques (e.g., long leash, shake can, remote spray collar) may be used to teach the pet to avoid area, object, or behavior
Aversion	Sprays or ointments which taste hot or bitter can be applied to household objects, or motion-activated sprays or alarms may cause avoidance
Supervision/confinement	Whenever the owner cannot supervise, the dog should be confined to a crate, exercise pen, or dog-proofed room so that it does not have the opportunity to engage in unacceptable chewing until the pet can reliably be left alone
Territorial arousal/noise phobia	Change window coverings, place barricades, use sound muting (e.g., music, white noise) or confinement so the pet cannot see or hear stimuli
	Use a motion-activated alarm to keep the pet away from windows
	Desensitize and countercondition to territorial/anxiety/fear-evoking stimuli
	See Chapter 12 for treatment of phobic and anxiety disorders and Chapter 20 for territorial aggression

Box 16.1 Destructive chewing and digging (client handout #6, printable version available online)**Choose the right toys**

1. Select toys that are appealing but safe. Find textures and scents that are attractive to your dog and maintain interest. Play toys should be big enough that they cannot be swallowed. If the toy may be damaged by chewing make certain it is not harmful or toxic if swallowed; otherwise closely supervise its use. Raw-hide pieces should be large enough for the puppy to gnaw; rolled or flat sheets may be preferable to sticks or pieces with knots that might cause problems if swallowed.
2. Choose toys that maintain the dog's interest as long as possible such as those that can be coated, stuffed, or filled with food to maintain interest. Toys can last considerably longer if the chews are attached to the toy or can be stuffed tightly inside. Dental treats and dental foods are healthy for the teeth and may prolong chewing.
3. Change toys, rotate through them, or fill with treats or food to maintain interest.
4. Choose toys that are not similar to your possessions (e.g., old shoes, towels, or clothes).
5. Use praise and affection, or occasionally toss a small treat to the puppy for chewing on its toys.
6. Many toys are designed to be coated, stuffed, or filled with food treats to be self-rewarding when chewed. Freezing the toys with food stuffed inside may extend the duration of chewing and play. Be sure the pet will release the toy on cue before beginning tug games. Toys such as Buster Cube, Tricky Treat, Crazy Ball, Twist'n Treat or Kibble nibble are designed to be filled with food or treats and manipulated to deliver the contents slowly and encourage the pet to work for its food.

Encourage exploratory play

Food can be hidden throughout the environment to encourage exploratory behavior.

Provide a regular regime of social play

1. Engaging in regular activities with your dog provides social, physical, and mental enrichment as well as structure and routine. Social activities might include walking or jogging, retrieving games such as Frisbee, or playing ball, swimming, or more intense activities such as flyball, herding trials, or agility to meet the needs of high-energy individuals and working breeds. Obedience training provides quality time with the family, while teaching new tasks.
2. Tug games can be an energetic form of social interaction and oral stimulation. Toys should be durable and designed for games of tug, and should not include your possessions. Train your dog to release the toy using treats or another toy as rewards during play. Be sure the pet shows no toy aggression before beginning tug games. If the dog will not give up the toy and becomes possessive or aggressive, cease tug games and seek guidance from a qualified behaviorist if possessive behavior continues.
3. Dogs with good social skills with other dogs can benefit from play sessions in your yard or at the park.

Preventing and deterring undesirable chewing

1. Even if your dog has sufficient exercise, play, and chew toys, it may still explore, steal, or chew household possessions. Be sure to supervise and prevent it from getting to objects or locations where damage might arise (e.g., barricades, crate training, dog-proofing).
2. Potential targets of chewing might be made less appealing by spraying with aversive-tasting substances or using avoidance devices such as motion-activated alarms or spray devices.

3. If you catch your dog in the act of chewing on something inappropriate, immediately interrupt the behavior with a sharp noise or a pull on a leash. Then, direct the dog's focus to proper chew toys and reward with praise or a treat. However, even if you catch and interrupt your pet when chewing inappropriate items, it may only learn to avoid chewing these items in your presence.
4. Never punish after the act, never use physical punishment, and never use any correction that causes the pet to be anxious or avoid you.

Chewing and anxiety

1. Chewing and destructiveness may also arise in response to anxiety and should not be considered as an attempt to "get even with you." Anxiety could be due to distress about being separated from the family (separation anxiety), noise or storm phobias, and high arousal or anxiety when people or other animals come onto the property. Treatment to reduce underlying anxiety generally requires a consultation with a qualified behaviorist to determine the cause of the problem and develop an appropriate treatment program.

Digging

1. First determine why the dog is digging to develop an appropriate treatment program.
2. Dogs that dig as a form of play or exploration should be provided with greater enrichment and structure in the form of scheduled social play, exercise, and training, by providing toys for chewing and play, or by leaving the dog with a social partner when leaving the pet outdoors (see [Chewing](#), above).
3. If the dog is digging to escape, the fencing will need to be made more secure and avoidance units that activate a spray collar may be added. However, if the pet has previously escaped and the reason for escape attempts is not addressed, the dog may try even harder. Consider blocking sights or sounds, providing a dog house for increased security, and using reward training techniques to reduce fear and anxiety of noises, people or pets on the other side of the fence.
4. For pets digging holes to capture prey or dig a nest and cool off, consider confining the pet to a run or pen with shade and fresh water and provide a digging pit with sand or soil in a portion of the area. Burying toys or food in the digging pit can help encourage digging.
5. Regardless of the cause, digging can be prevented or interrupted by supervising outdoors. Commands such as "come" or "leave it" or keeping a long leash attached should be effective; however, the pet is likely to return to digging when you are not watching.
6. Avoidance training may be effective if the pet can be deterred while the owners are out of sight (e.g., remote spray collar, turning on the sprinkler) or with booby traps (motion-activated spray, alarm, or sprinkler) or deterrents placed in the area (e.g., rocks, gravel, or water in the hole, chicken wire, or fencing over the hole). However, some pets will just change to a new location.
7. Digging can be prevented when the owner cannot supervise by confining the dog to a secure run with gravel, patio stones, or a paved surface. Give feeding and chew toys in the area to provide enrichment opportunities.

the behavior only in the family's presence. At worst, punishment can cause fear of family members, or a confused and conflicted pet. Instead of punishment, in most cases it is safest just to use a sharp noise or tug on a long leash to interrupt undesirable chewing immediately. The pet should then be directed to its toys.

Teach the pet to avoid chewing on found objects

- Provide interesting toys and occasionally toss a small treat to the pet when it spontaneously picks up/chews the toys.
- Take three objects the pet is likely to chew (old shoe, towel, sock).
- Liberally spray each with a bitter or hot spray.
- Place in areas where the pet will find and pick up.
- Praise the pet when it spits the object out.

- Frequently move the objects to different areas around the home and respray as needed.
- Every 2 weeks, change the objects.

Prevention

The best way to prevent destructive chewing is to provide puppies with appropriate chew toys and teach from the outset which items are theirs to chew and which are not. Until the owner can trust the pet, it should be under constant supervision or confined to a safe "puppy-proofed" area. Young dogs also need ample exercise as an outlet for some of their boundless energy. Owners should not play tug games with towels or socks, or give items like old shoes to chew. Advise owners to find toys that are appealing because of their texture or can be filled, stuffed, or coated with food (see [Chapters 4, 6 and 10](#)) for details on prevention).

CASE EXAMPLE

Barney was a 9-month-old Labrador retriever presented for destroying items around the house. The owners rarely had time to exercise him. During the day, while the owners were at work, Barney was left unconfined in the home. Since his adoption at 2 months of age, he had eaten holes in the carpet, chewed large holes in expensive pieces of furniture, destroyed books, and dug up or chewed every plant in the home.

A dog run was set up in the basement to provide safe confinement when the owners could not supervise. Barney was only allowed out of his run if and when he could be kept in sight. The family was instructed to provide physical, mental, and social enrichment, including retrieving games, physical exercise, and reward-based training each day. A professional dog walker was recommended to help out with an extra midday walk. When the owners were at home they provided Barney with durable, rubber, food-stuffed toys and toys with beef hide attached to direct and maintain desirable chewing. Whenever he initiated chewing on any

of his toys, the owners were to praise him and occasionally throw him a small treat. Household items that Barney had chewed were coated with a commercial antichew spray. Small plants were placed out of reach. A second group of food-dispensing manipulation toys was also purchased to be left with Barney in his run, when the owner left for the day. After the midday walk, the dog walker refilled the toys and again provided them in the run. Barney's training was focused on sit and watch, relaxed down stays, come commands, and to go to his kennel for his toys.

Progress was slow. Whenever the owner was unable to supervise Barney, Barney would find household items to chew. The owners were upset but resisted the temptation to punish Barney. They were advised to fit Barney with a head halter and to leave a leash attached to ensure supervision at all times unless he was in his run or chewing on his own toys. After 6 months of gradually decreasing supervision, Barney could be trusted with the run of the house as long as the owners were home.

Digging

Digging may be a nuisance, but is an innate trait for many dogs. The behavior often arises in many of the same situations as other destructive behaviors, often due to a lack of sufficient alternative forms of stimulation. Breeds that are bred to flush out prey such as terriers, which may dig as part of the hunt, may be stimulated to dig wherever there are odors of food or prey in the ground. Dogs will also dig to bury and retrieve bones. Some dogs dig to escape confinement. In addition, some dogs are motivated to dig cooling and nesting sites. For a client handout, see [Box 16.1](#) (client handout #6, printable version available online).

Diagnosis and prognosis

Since dogs dig for a number of reasons, it is important to determine the underlying cause to be able to formulate an effective program for management and treatment. Carefully interview the owner as to the circumstances surrounding the digging. If the digging is along the fence or near a gate, the dog may be digging to escape. Escape attempts could be due to separation anxiety, noise phobias or sights, sounds, and

odors outside the yard, including potential playmates, threats, prey, or an intact female (if the dog is an intact male). Digging for prey might be at single or multiple sites in the yard; however, depending on the prey species (e.g., voles) it may be difficult to identify these as the cause of digging. A dog that digs to nest and cool will generally lie in its digging "pit."

The prognosis varies considerably with the underlying cause. Even with additional stimulation, neutering of intact males, and minimizing access to the stimuli that might incite escape, some dogs require either supervision whenever outdoors or a suitable confinement area to prevent undesirable digging.

Management and treatment

Digging can usually be suppressed if the dog is accompanied outdoors. However, unless the cause is identified and treated, digging will continue in the family's absence. If the pet is digging for prey, prey animals should be captured and removed, or the pet confined to an area of the yard that is free from prey. For dogs that are digging to escape, the motivation for the behavior should be determined. Barriers to

visual stimuli, neutering intact males, increased opportunities for play and enrichment in the yard, and secure confinement might be needed. Noise phobias must be treated. Once escape has been successful, further escape attempts are likely to intensify. As with other destructive behavior, the dog should be provided with additional social enrichment, including physical exercise, activities such as agility, or a game of fetch and training before leaving the dog on its own. During departure the dog should be provided with enrichment activities that maintain interest such as feeding toys, frozen-food-stuffed toys, scattering food for seek and search, durable chews, large play balls to push around, wooden boxes or ramps on which to climb and explore, and rubber toys suspended from tree limbs. In some cases adding another dog for play and distraction from chewing may help, although it is possible the family could end up with two diggers.

When dogs are digging to create a cool respite, owners should provide cool shaded areas, or perhaps a wading pool for cooling. For some dogs, a dog house may provide shade, comfort, and security. Another option is to allow the dog a place for digging – loose soil or a child's sand box is ideal. Digging can be encouraged in the area by seeding the area with buried bones, toys, and other treats. To encourage digging in the appropriate area, the owners may need to supervise the pet when outdoors. Digging holes can be filled with rocks, gravel, or water, or covered with chicken wire or fencing. But the pet may just choose another site to dig. Supervising will help deter undesirable behavior but digging will likely resume when the owner is not present. Physical punishment of any type should never be used. However, if the owner can punish remotely by turning on a sprinkler, or a remote-activated spray collar, or uses booby traps such as a motion-activated sprinkler, or a spray collar activated as the pet approaches the fencing, digging might be deterred.

For many dogs, the best option is management, such as a dog run with a paved or heavy gravel floor, perhaps with a digging area at one end.

Prevention

Dogs should be closely supervised when outdoors for a few months to keep the dog engaged in desirable activities, and to interrupt undesirable digging quickly. If a verbal command (e.g., come) or audible deterrent (stop, no, tssk, shake can) is unsuccessful at getting the pet to cease digging, a long leash can be left attached. Once digging is established it can be a challenge to correct. When leaving the dog outdoors unsupervised, a secure confinement area can be provided to prevent digging or to limit digging to that area.

CASE EXAMPLE

Sonic, an intact male Border collie, was presented for digging under the gate and roaming the neighborhood when the owner was at work during the day. Upon arriving home, the owner would see Sonic, call him, grab him by the collar, and punish him for escaping.

The owner was told that punishing the dog after he had escaped was counterproductive. In fact, Sonic was starting to avoid the owner when he came home and was more hesitant to come when called. Neutering was recommended to decrease sexually motivated escape and roaming behavior. Increased exercise, including jogging and games of fetch, was suggested each afternoon when arriving home. The owner purchased several inexpensive soccer balls and encouraged the pet to play with them by throwing and kicking them around the yard. The owner covered the space below the gate where Sonic had escaped with chicken wire. When the owners viewed the dog investigating near the gate, a sprinkler hose was remotely turned on. Each morning before departing Sonic was provided with a frozen-food-filled rubber dog toy and his morning diet was scattered across the patio for Sonic to seek and track down.

Sonic would occupy himself with his toys and food when the owners departed and was excited when the owners returned home. However, he did have relapses any time the owner was required to work late. Since the owner's schedule was not sufficiently regular, this problem was resolved by hiring several neighborhood children to play with Sonic for 1 hour each afternoon after school.

References

1. Becuwe V, Belanger MC, Frank D, et al. Gastrointestinal disease with excessive licking of surfaces. ACVIM Forum, 2009.
2. Lord LK, Reider L, Herron ME, et al. Health and behavior problems in dogs and cats one week and one month after adoption from animal shelters. J Am Vet Med Assoc 2008;233:1715–22.
3. Bamberger M, Houpt KA. Signalment factors, comorbidity, and trends in behavior diagnoses in dogs: 1644 cases (1991–2001). J Am Vet Med Assoc 2006;229:1591–601.

Recommended reading

American Animal Hospitation Association behavior handouts. aahanet.org
Ohio State Indoor Pet Initiative.
www.indoorpet.osu.edu

Patronek GJ, Dodman NH. Attitudes, procedures, and delivery of behavior services by veterinarians in small animal practice. Can Vet J 1999;215:1606–11.

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Feline destructive behaviors

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Destructive behavior is a common complaint of cat owners, and can occur for a variety of reasons. Causes of undesirable chewing and scratching include inadequate stimulation, exploratory behavior, chewing objects with an interesting odor or taste, marking, and attention-getting behaviors. Some problems can have more serious and complex underlying etiologies, such as compulsive chewing disorders. In many cases it is simply a matter of normal behavior by a young cat being directed toward an unacceptable object or occurring in an unacceptable area. Preventive counseling can help the family avoid these types of problems in young pets (see [Chapter 4](#)).

Destructive activity and exploratory behaviors

Young cats that climb drapes, jump onto counters, knock over objects, or chew on household objects (e.g., string, electric cords, plants) are usually exhibiting play and exploratory behaviors. Most young feline destructive behaviors can be corrected by providing appropriate outlets for play, investigation, and chewing, as well as by preventing or deterring access to problem areas and items. Exploration and investigation should be channeled toward proper toys at acceptable locations. Toys and frequent interactive play sessions can give the cat an opportunity to satisfy some of its innate needs for activity and play. The family should provide perching areas, opportunities for exploration, climbing and scratching, toys with food that require manipulation, cat grass, catnip, or perhaps even dog chews to keep the pet's focus on what is desirable. Owners must also identify and prevent access to any objects that might encourage the behavior. A

program that provides appropriate outlets for enrichment is discussed in [Chapter 4](#).

Supervision with timely interruptions and guidance to engage in desirable behaviors, or simple disruptive techniques such as a hand clap, whistle, or water gun, can be used as long as they do not cause pain or fear. However, disruption of any sort will only stop the behavior in the owner's presence. Therefore while prevention or even confinement to a cat-proof area would be preferable, booby trapping (or aversion conditioning) with double-sided tape, motion-activated alarms or sprays, or a plastic carpet runner with nubs up may deter the cat from returning to the area as long as alternative acceptable outlets are provided (see [Box 7.1](#) and stress management in [Chapter 6](#)).

Destructive scratching

Cats scratch upright objects for maintenance of claws and predatory apparatus, stretching, and muscle maintenance, and as a form of territorial marking.¹ Scratching provides both a visual (the behavior itself and the marks left on the object) and a scent gland pheromonal signal.² During scratching behavior, the pheromones (semiochemicals used for conspecific communication) are liberated on the surface of the object by the footpads. Scratching may help to maintain territorial familiarity so that in a stable household with a minimum of conflict cats may choose one or more preferred sites to which they can return both for claw conditioning and to restore visual and scent marks. Cats often scratch at prominent locations in their home or yard, and along commonly used routes.² However, as with urine marking,

when there is competition or conflict over resources, or when odors are unfamiliar, novel, or associated with anxiety or conflict, scratching may be seen in multiple locations which may be environmentally relevant to the cat. This behavior is not a problem if the targets of the behavior are outdoors or the pet's designated scratching post but can be a serious problem when the owner's walls, furniture, carpets or other valuable possessions are destroyed.

When household scratching cannot be managed or resolved, it can be a major source of owner anxiety and a reason for relinquishment. A study in Germany (where declawing is illegal) identified scratching as one of the most common owner behavioral complaints in 15.2% of all cases. The most frequent targets were chairs, couch, or sofa, with 23% scratching walls, 16% carpet, and 5% leather boots. In 60% of the homes the owners attempted correction, with 9% successful, 49% partly successful, and 39% unsuccessful.³ In a more recent US study, the most common problem reported 1 week after adoption in cats was chewing, digging, or scratching in 25.2% of cats, with 28.1% of owners reporting problems after 1 month.⁴ It has also been estimated that about 20% of cats scratch furniture and about 4% scratch people.⁵ Therefore practitioners should be aware of the need for proactive advice in the prevention and management of destructive behaviors for all new cat owners.

Diagnosis and prognosis

The owner has observed the cat scratching or has found evidence of damage in the home. Cats that have been punished by the owner during scratching may only scratch when the owner is out of sight. Scratching that is limited to one or more selected locations for stretching, claw maintenance, and scent marking is to be expected. However, if scratching is due to marking, the cat may target multiple locations, including prominent objects throughout the home, sites of social significance such as common areas, or toward odors that are novel, unfamiliar, or the source of anxiety. When marking, the cat may approach and sniff the surface to be scratched, which may be followed by flehmen; the limbs are stretched with extension of the body and the site scratched using both its forepaws alternately. Genetics, environment, and previous experience can all play a role in the development and progression of scratching. When underlying sources of conflict cannot be identified, the behavior has been well established, and the household is not conducive to preventive measures, then the prognosis may be more guarded.

Management

The first step is to find one or two locations and surface textures that are appealing to the cat and acceptable to the family to allow the cat an outlet for scratching (i.e., scratching posts). The owner may need to offer several different types until a suitable one is found. However, if there are particular surfaces and locations that the cat prefers it would be best to provide a scratching post with the most appealing substrate at or near to the location where the cat prefers to scratch. When selecting a place, a few posts might be provided near entry and exit points if the cat goes outdoors and near the area where the cat sleeps. The scratching post should

be stable and tall enough for the cat to sit on its hind legs and stretch out to engage in the scratching motion. Some cats prefer to scratch on horizontal surfaces such as carpet or the underside of a bed (while lying on their backs). Commercial posts made of sisal or corrugated cardboard or even an upright fireplace log might be appealing, while tightly woven materials or those with a horizontal weave are unlikely to be appealing. The posts can be placed in front of or mounted onto areas where the cat prefers to scratch. Another alternative is to move objects or furniture that the cat is scratching and to place a scratching post at that location. The family should reward desirable scratching (clicker training can be helpful), although simply allowing the cat to scratch in acceptable areas may be sufficiently self-reinforcing to the cat. Gently rubbing the cat's paws on the area as a form of interdigital scent marking might help to encourage further scratching, but this can be fear-evoking if a positive outcome cannot be achieved.⁶ Recent studies have found that a synthetic analogue of the feline interdigital pheromone, Feli-scratch (which at the time of writing is not yet commercially available) can effectively encourage cats to scratch on a post or surface where the product has been applied.^{7,8} It may also be useful in training young kittens where to scratch.

During initial training, the cat should be closely supervised. When it can't be supervised, access to problem areas should be denied. The cat can be confined to an area where it has acceptable areas for scratching, climbing, perching, play, litter, and water and access prevented to areas where scratching is not acceptable. The cat should be engaged in alternate behaviors whenever possible. Desirable scratching should immediately be rewarded, and the cat should be covertly interrupted if it begins to scratch on an unacceptable surface. Remote forms of punishment such as a remote-activated spray device, hair dryer, or alarm might teach the cat to avoid the area without association with the owner. Another option is to protect the problem areas by draping a loose sheet of fabric or a thick sheet of plastic over the area to make the site less appealing to scratch or by making the site unpleasant using an aversive odor, double-sided tape, or a motion-activated alarm or spray device. Another form of booby trap is to drape a towel over the area with a stack of plastic cups or empty soda cans on top so that they noisily tumble down when the towel is pulled. While these techniques are intended to cause the cat to avoid the area, they should not be sufficiently intense to cause fear or anxiety. When the presence of the booby trap or alarm is obvious, some cats will soon recognize when it is safe to approach the area and when it is not, so that the owner may need to booby trap the areas persistently. Over time if the provided scratching areas are desirable to the cat, it should begin to return to these familiar areas for scratching and scent marking and have a decreased interest in scratching other areas of the home. Claw (nail) trimming and plastic nail cap coverings are other options to reduce scratching damage.

When scratching occurs as a marking behavior, there may be multiple sites with varying degrees of social significance and owners will need to focus on the stressors that might be responsible for the marking. Possible causes include cats visiting in the yard, a new pet added to the home, social problems within the home, or major environmental changes (e.g., new furniture, new plants, remodeling, moving). In addition to blocking access to stimuli that might incite

marking and resolving the underlying conflict where possible (see other chapters for details on redirected aggression and intraspecific aggression), for these cases the pheromone spray Feliway may be helpful. Feliway should be sprayed over the scratched area once per day. Another option if the cat begins to target new sites is a Feliway electronic diffuser. At the same time, the appeal of the desired scratching sites might be increased by finding a new, more appealing surface or location, placing toys or catnip in the area or atop the scratching post, reinforcing use of the post with treats or play toys or by placing the feline interdigital pheromone Feli-scratch on the post. On the other hand, new material and new posts may be less appealing than previously marked surfaces and posts.

Some owners are unable to train their cats to stop furniture scratching despite attempts at training and behavioral modification. These owners may then be faced with the undesirable options of rehoming the cat, allowing the cat to go outdoors, or constant confinement. In North America, scratching is a major reason for cat relinquishment. Cats that are relinquished to shelters run the risk of being euthanized. Another alternative, which is performed relatively frequently in North America but is condemned and even illegal in some countries, is declawing. In North America it has been estimated that about 86% of cats presented for declawing are due to household damage and 29% are to prevent human-related injuries.⁹ While declawing is considered inhumane and is now illegal in many countries, the surgery continues to be legally performed in some countries in an attempt to allow some owners to retain cats where they have been unwilling or unable to use behavioral and environmental management to prevent damage. Declawing is generally referred to as the surgical removal of the claws and third phalanx from the front feet, while tendonectiony removes a piece of the deep flexor tendon so that the cat retains its claws but cannot use them for scratching.

With accurate diagnosis, appropriate preventive and management advice, and the additional options of plastic nail caps and avoidance devices (such as the motion-activated alarm or air spray), it should be possible to advise owners as to how to manage their cats behaviorally without declawing. The most recent position statement of the American Association of Feline Practitioners is that, where scratching behavior is the determining factor as to whether a cat can remain as an acceptable pet in the home, or if there is a risk to immunocompromised individuals that might be reduced, the decision to declaw should be considered and might be an appropriate option. While there is no documentation of increased risk should these cats continue to go outdoors, it would be prudent to keep declawed cats only as indoor pets since they are unable to use their front claws to aid in climbing or defense.¹⁰ To date, studies have shown no long-term deleterious effects on behavior or health, including no effect on aggression or soiling.^{11–15} In addition, studies have shown that declawing successfully met the owners' objectives and many owners reported a stronger owner–cat bond.^{16,17} However there is little doubt that the surgery causes pain and discomfort which must be carefully managed.^{18,19} In addition, there are claims that certain surgical techniques and modalities may further speed recovery and reduce pain.²⁰ Tendonectiony, on the other hand, can lead to overgrowth of claws, the need for

ongoing claw care, and potential long-term discomfort, and is not recommended.¹⁰

Prevention

Prevention should focus on providing for the needs of the kitten, setting up a play and scratching area as discussed under treatment (appropriate height, texture, and location – near sleeping areas), encouraging and reinforcing desirable scratching with toys and treats, supervision and prevention (including confinement where needed), and the use of interdigital pheromones to attract the cat to the area (see [Chapters 4, 6 and 10](#) for enrichment strategies).

CASE EXAMPLE

Kermit was a 7-month-old neutered male cat that had been scratching the owner's living-room sofa for the past 2 months. The owner was planning to replace the furniture but wanted to stop the scratching behavior first. The sofa was covered with a heavy plastic sheet while the owner trained Kermit to use a scratching post. A fire log mounted upright on plywood was selected because the cat showed some interest in it and it was dissimilar to the fabric on the sofa. A small amount of catnip was sprinkled on the post to attract the cat. When Kermit approached the post he was given a small cat treat; when he made contact with the post he was given a few treats. Eventually, treats were reserved for times when the cat actually scratched the post. After 4 weeks, the plastic cover was removed from the sofa when the owner was at home and could watch Kermit. The owner was instructed to set up a motion-activated spray (Ssscat) in front of the couch where Kermit would still occasionally try to scratch. Within 2 months the owners bought new furniture and supervised Kermit closely whenever he was in the room until he consistently used only his scratching post.

Destructive chewing and ingestive behaviors by cats

Cats that chew or suck on objects may cause costly damage to the household or serious injury to themselves (see [Chapter 10](#)). Kittens are highly investigative and tend to chew or ingest many household objects. At 5–6 weeks of age, some kittens may even begin to eat their own litter. Kittens given freedom to wander through the home and explore unsupervised can damage the family's possessions. They can become obstructed or seriously injured when they chew on string, thread, latex, rubber, and electric cords. Indoor cats with little or no access to grass or other vegetable matter may chew houseplants.

Fabric chewing by some cats may also be a form of compulsive behavior (see [Chapter 11](#)). Although sucking or chewing on fabrics can occur in cats of any lineage, there appears to be some genetic predisposition for this type of activity. Siamese and Burmese cats are especially prone to this type of behavior. Wool is most commonly chewed, followed by cotton and then synthetic fabrics. Rubber, plastic, wood, and cardboard may also be chewed. The damage done by these cats can be quite extensive. The behavior usually arises during the first year of life, commonly between 4 and 12 months of age. Some cats will show an increase in pica between 6 and 18 months, and about 2 months after rehoming.²¹

Diagnosis and prognosis

Most destructive chewing by young cats is attributable to their desire to play and investigate. When adult cats engage in this behavior it could be exploratory, inadvertently reinforced by the owners, or a compulsive disorder (see [Chapter 11](#)). A familial disorder is suspected in individuals of some breeds that are compulsive chewers, and for those cats the prognosis for completely redirecting their activity is guarded.

Management

Treatment for young cats with destructive chewing problems involves keeping the chewed objects away from the cat (or the cat away from the chewed objects), teaching the cat to avoid areas where it might find objects to chew, making target objects taste bad, wrapping or covering cords with protective wrapping or plastic piping and providing the pet with its own chewing alternatives. Cat activity centers and interactive play toys can keep some cats busy and away from household possessions.

Cats that chew on plants may find them particularly appealing because of their taste or texture. Supplying the pet with lettuce, catnip, or access to a herb garden may reduce chewing on houseplants. Providing alternative oral stimulation in the form of dog chew toys or raw hide, or bulky, dry, or chewy foods might satisfy the desires of some cats. Applying a little meat spread, cheese, or fish oil to the toys or hiding some food inside might help pique the pet's interest. Feeding sessions can be made more challenging by providing a means of searching for food. By offering small meals in a variety of locations, or requiring some form of manipulation to obtain food (feeders that deliver food when the cat interacts with them), feeding can become a much more active and productive part of the cat's day. (Also see [Chapter 10](#))

Environmental punishment using taste aversion or booby traps could be used to deter cats that develop fixations for household items. A plant's leaves can be lightly sprayed with water, and then sprinkled with cayenne pepper. Commercial sprays with an adverse taste can also be used to coat objects to discourage chewing. Motion-activated alarms or sprays can be placed near the plants to chase the cat away when it approaches, or hidden under fabric items that the pet chews. Double-sided tape can be placed around the base of plants or wooden dowels placed into the soil to keep the cat away. (See [Chapter 7](#) and [Box 7.1](#), client handout #21, printable version available online, for examples of booby traps and their use.) Selective serotonin reuptake inhibitors (fluoxetine, paroxetine, sertraline) or clomipramine may be helpful

for wool sucking by Oriental and other breeds when this is a manifestation of compulsive behavior. (See [Chapters 8 and 11](#), and [Box 11.2](#), client handout #4, printable version available online, for more details on compulsive chewing and drug therapy.)

Prevention

The best chance of preventing destructive chewing in cats is to provide them with acceptable chew toys and interactive forms of exercise when they are kittens, and for some, through adulthood.

CASE EXAMPLE

Fred, a 1-year-old neutered male American domestic short-haired cat, was presented for chewing holes in the family's clothing and other fabric objects found around the home. Since both family members worked long hours, Fred spent quite a lot of time alone in the apartment. He had intermittently chewed on a variety of objects since he was adopted at 8 weeks of age, without causing a significant amount of damage. The chewing had escalated quite considerably in the 2 months prior to the consultation. The primary objects that were chewed were fabric items, although on rare occasions he would chew on wooden chair legs, pencils, and plastic pens. Yelling at the cat served to distract him temporarily but did not stop the behavior. Physical examination, fecal examination, and routine hematological and biochemical tests failed to reveal a medical reason for the problem. The cause was thought to be behavioral.

The owner was advised to provide a variety of food-filled toys, dog chew toys, some catnip toys, and some kitty grass, as well as to spend more time playing with chase toys with Fred. A "kitty condo" was purchased which had crawl spaces, perches, and hanging toys to keep him entertained and occupied. Any item that Fred might chew was to be kept from his reach, except for two or three items that had been coated with a commercial antichew spray. Several times a day the items were moved to new positions around the house. Every few days, the type of items was changed. This was done to teach him to expect that all fabric items, no matter where they are located or what the shape, have an unacceptable taste.

Fred seemed to be doing well until he managed to get into the guest bedroom and chewed on the drapes. To stop this behavior, a light cotton fabric was pinned to the front of the curtains to protect them and the bitter spray was applied in case Fred entered the bedroom again. After this minor setback, and more diligence on the part of the owners, the behavior gradually decreased. Dietary alterations to add more bulk or to use a larger number of smaller high-protein meals had no apparent effect. The owners did report that he had the occasional relapse if they left doors open or forgot to put things away, but the damage was minimal.

References

- Bradshaw JWS. The behavior of the domestic cat. Wallingford: CAB International; 1992.
- Bradshaw J, Cameron-Beaumont B. The signalling repertoire of the domestic cat and its undomesticated relatives. In: Turner DC, Bateson P, editors. The domestic cat, the biology of its behavior. Cambridge, UK: Cambridge University Press; 2000. p. 67–93.
- Heidenberger E. Housing conditions and behavioral problems of indoor cats as assessed by their owners. *Appl Anim Behav Sci* 1997;52:345.
- Lord LK, Reider L, Herron ME, et al. Health and behavior problems in dogs and cats one month after adoption from animal shelters. *J Am Vet Med Assoc* 2008;233:1715–22.
- Patronek GJ. Assessment of claims of short- and long-term complications associated with onychectomy in cats. *J Am Vet Med Assoc* 2001;219:932–7.
- Beaver BV. Feline behavior; a guide for veterinarians. 2nd ed. St. Louis, MO: Saunders; 2003. p. 100–26.
- Cozzi A, Lecuelle L, Bougrat L, et al. The interest of the use of feline interdigital semiochemical to induce scratching in cat.

- St. Louis, Proc ACVB, AVSAB annual scientific session; 2011. p. 22–4.
8. Pageat P, Bougrat L, Monneret P, et al. The effect of feline interdigital semiochemicals with primers in relation to scratching marking. *J Vet Behav* 2010;5:37.
9. Landsberg GM. Declawing revisited. Controversy over consequences. *Vet Forum*; 1994; September, 94–5.
10. American Association of Feline Practitioners statement on declawing November 2007. Available online at: <http://www.catvets.com/professionals/guidelines/position/index.aspx?Id=291> (accessed July 19, 2011).
11. Bennett M, Houpt KA, Erb HN. Effects of declawing on feline behaviour. *Comp Animal Pract* 1998;2:7–9, 12.
12. Jankowski AJ, Brown DC, Duval J, et al. Comparison of effects of elective tenectomy or onychectomy in cats. *J Am Vet Med Assoc* 1998;213:370–3.
13. Halip JW, Vaillancourt JP, Luescher UA. A descriptive study of 189 cats engaging in inappropriate elimination behaviors. *Feline Pract* 1998;26: 18–21.
14. Morgan M, Houpt KA. Feline behavior problems. The influence of declawing. *Anthrozoos* 1989;3:50–3.
15. Borchelt PL, Voith VL. Aggressive behavior in cats. *Compend Contin Educ Pract Vet* 1987;9:49–57.
16. Landsberg G. Cat owners' attitudes toward declawing. *Anthrozoos* 1991;4: 192–7.
17. Yeon SC, Flanders JA, Scarlett JM, et al. Attitudes of owners regarding tendonectomy and onychectomy in cats. *J Am Vet Med Assoc* 2001;218:43–7.
18. Franks JN, Boothe HW, Taylor L, et al. Evaluation of transdermal fentanyl patches for analgesia in cats undergoing onychectomy. *J Am Vet Med Assoc* 2000;217:1013–9.
19. Gellasech KL, Kruse-Elliott KT, Osmond CS, et al. Comparison of transdermal administration of fentanyl versus intramuscular administration of butorphanol for analgesia after onychectomy in cats. *J Am Vet Med Assoc* 2002;220:1020–4.
20. Mison MB, Bohart GH, Walshaw R, et al. Use of carbon dioxide laser for onychectomy in cats. *J Am Vet Med Assoc* 2002;221:651–3.
21. Bradshaw JWS, Neville PF, Sawyer D. Factors affecting pica in the domestic cat. *J Appl Anim Behav Sci* 1997;52: 373–9.

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Canine housesoiling

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Canine inappropriate elimination

Overview

The main purpose of micturition and defecation for the young puppy is to rid the body of wastes. While this is also true for adult dogs, elimination behavior can serve a number of additional functions, including communicating information about sexual status, individual identity, and territory. It may also occur in a variety of situations as a component of submissive responses, fear, separation anxiety, and excitement.

At about 3 weeks of age, most puppies begin eliminating away from the nesting area on their own. By 5 weeks of age, locations and substrates for elimination are chosen and by 9 weeks these become more specific. Most housetraining strategies involve taking advantage of the dog's innate

proclivity to avoid eliminating in its den area and combining this inclination with operant and classical conditioning. The main techniques involve rewarding and shaping desired behavior, scheduling the dog's feeding and activities to establish a regular elimination schedule, and managing the pet's environment in order to prevent elimination in undesirable areas. With patience and consistency, most owners are able to train their dogs to eliminate outdoors and to cease eliminating indoors within a few months.

This tendency to keep the "den" area clean of wastes can be overcome by a number of factors. For instance, a dog that is confined for long periods will soil its living areas if not given the opportunity to relieve itself in a more appropriate area. Dogs that learn to eliminate in their crate (e.g., pet store, puppy mills) before they are adopted may be refractory to having this behavior altered. Also, medical problems such as diabetes insipidus and renal disease may reduce the dog's

ability to control elimination for entirely physiological reasons.

As environments and lifestyles change, some owners, such as those with small dogs living in high-rise urban dwellings, may prefer to train their pets to an indoor elimination site (i.e., doggy litter, “potty pad”). Training to eliminate outdoors can be achieved within a few months for most pets. Teaching the pet to eliminate indoors but only in specific locations can be a more difficult task.

The importance of preventive counseling

Between 5 and 10% of canine cases at behavior specialty practices are presented due to housoiling¹; in addition, housoiling is a major risk factor for canine relinquishment.^{2–4} In an extensive internet-based survey of owners of 630 dogs, almost 30% of those dogs were reported to soil at least occasionally, and 55% of dogs being relinquished were reported to soil.⁵ Behavioral wellness should be a part of every visit, with particular emphasis on preventive counseling during the initial few visits for new dog owners. One study showed that dogs with inappropriate elimination had a seven times lower risk of relinquishment if they had two veterinary visits in a year compared to less than once a year; however, only 25% of dog owners report receiving veterinary behavioral advice.⁶ Veterinarians must not assume that owners have knowledge of normal canine behavior or an understanding of basic training principles such as housetraining. A study of dog owners who were relinquishing their pets showed that almost 50% believed that rubbing a dog’s nose in a mess when it soiled was helpful or were unsure if this was appropriate.⁷

Preadoption counseling can also be beneficial in the prevention of elimination behavior problems. An important ally in this regard is the adoption service or breeder. Although housoiling was the primary problem reported in 35% of dogs 1 week following adoption, most dogs were housetrained within 1 month.⁸ However, significantly more of the owners that had preadoption counseling considered their dogs housetrained (86.4–98.1%), and owners who received counseling used less verbal punishment and were more likely to clean soiled areas with enzymatic cleaners.⁹ Therefore, education from the time of adoption through the first few veterinary visits can prevent and resolve most housoiling problems effectively and humanely.

Housetraining

Housetraining is a simple process but one that needs to be explained in detail to new owners. Be sure to provide resource material in the form of reading material such as the handout available online (Box 18.1, client handout #14, printable version available online) or web links such as dogstardaily.com or healthypet.com (see our resource list in Appendix B). Emphasis should be placed on reinforcing elimination in the desired area. Unfortunately, most owners rely heavily on punishing undesirable behaviors rather than rewarding desirable behaviors. For the pet, it’s far simpler to learn in which areas elimination is regularly and consistently rewarded than to learn all of the potentially thousands of indoor locations where it might get punished for eliminating.

Teach the desired behavior

The first step is to teach the pet where it is acceptable to eliminate. To accomplish this, the owner must regularly accompany the pet to the chosen elimination area to ensure that the pet relieves itself and gets a timely reward.

Choose a substrate and location that are easily accessible for the puppy and desirable for the owners. Training should begin with a schedule of taking the pet to the elimination area every hour when it is awake and a family member is available. The dog should be praised lavishly and given a small treat as soon as it eliminates in the appropriate place. The owner should not wait until the pet is back indoors to give the reward since this actually reinforces returning to the home, not elimination. If the puppy wants to play, this can also be used as a reward immediately following elimination. If the puppy does not eliminate within 5–10 minutes, return indoors, monitor closely, and return outdoors frequently until successful. Within a few days, the family should be able to predict the interval at which the puppy needs to eliminate and should be taking the puppy out sufficiently often to meet this need. In addition, the family should take the dog to its elimination area shortly after eating, drinking, playing, upon waking from a nap, and just prior to confinement. Returning to the same area allows some residual odor to accumulate and should increase the likelihood that the pet will use the location. By using a verbal cue (e.g., “Go pee”) just as the elimination begins and rewarding immediately following each elimination, many dogs can learn the concept of eliminating on command. Dogs can be taught to eliminate on an indoor surface, such as newspaper, a “potty pad,” or a dog litterbox by using the same methods mentioned above.

Confinement/supervision to prevent inappropriate elimination

The next important consideration is to prevent elimination in undesirable areas by providing close supervision or confinement until the dog is fully trained to eliminate in its appropriate area and no longer eliminates in inappropriate areas. This may take anywhere from several weeks to many months depending on the age of the dog, the duration of soiling in the home, the consistency of family members, and how often the pet is allowed to sneak away and eliminate in the home. In general, a dog should not be considered housetrained until it has gone for at least 4–8 consecutive weeks without soiling the home. Adult dogs that have been housoiling for many years may take 6 months or more before they are dependably trained. Until this has been accomplished, the pet should be within eyesight of a family member 100% of the time. When it cannot be watched, it should be confined. Leaving a long leash attached as a drag line, or even attaching the leash to the owner’s belt loop, provides an effective means of keeping the puppy in sight, and gently and effectively interrupting indoor elimination without the need for verbal reprimands. When leaving a leash attached, the puppy must be constantly supervised and the leash should not be left attached to a collar that might choke when tightened. With constant observation and supervision, the family should soon be able to recognize signs that the puppy is about to eliminate

Box 18.1 Puppy housetraining guide (client handout #14, printable version available online)**Choose the desired location and teach the puppy where to go**

1. Ensure that the outdoor location is practical and easy to access.
2. Go out with your puppy every time and immediately praise and give intermittent food rewards for elimination in the desired area.
3. During initial training, take the puppy out to eliminate each hour during the daytime when home to supervise. If it does not eliminate within 5 minutes, return indoors, supervise closely for 15–30 minutes and try again.
4. Take the pet out when it is most likely to need to eliminate:
 - Following play, exercise, naps, and being released from confinement.
 - After eating and drinking. Supervise closely after feeding and take the puppy out to eliminate within 15–30 minutes.
 - Prior to confinement or bedtime.
5. Consider teaching your puppy to “go” on command by saying a command word, such as “hurry up,” in a positive tone as it squats to eliminate.

Maintain a consistent schedule

1. Offer food two to three times each day at the same time to help establish an elimination routine.
2. Only leave the food down for 20 minutes or until your puppy walks away. Be sure to discuss with your veterinarian how to assess your puppy's body condition score so that food quantity can be adjusted according to your pet's needs.
3. Consider taking up the water bowl 1–2 hours prior to bedtime.

Prevent mistakes

1. Until the puppy has completed 4 consecutive weeks without soiling in the home, it should be within eyesight of a family member or confined to a safe puppy-proofed area.
2. Use a crate, pen, or room for confinement whenever it cannot be directly supervised. The confinement area is intended to serve as a safe, comfortable bed, playpen, or den for the puppy. The puppy should not be confined until after it has eliminated and had sufficient exercise and social interaction (i.e., when it is due for a sleep, nap, or rest) and should not be confined for any longer than it can control elimination, unless paper, potty pad, or litterbox-training techniques are being used.
3. Most puppies can control elimination through the night by 3–4 months of age. Owners must be aware of their puppy's limits. During the daytime, puppies up to 4 months usually have a few hours of control, while puppies 5 months and over may be able to last longer.
4. If the puppy eliminates in its cage, it may have been left there longer than it can be confined or the crate may be large enough that it sleeps in one end and has room to eliminate in the other; in this case a divider might be used temporarily. Also, if the puppy is anxious about being confined or left alone, it is unlikely to keep the crate clean.
5. Leave a leash attached during supervision to interrupt any attempts to eliminate indoors, and direct the puppy outdoors. By

observing the puppy closely for pre-elimination signs, the puppy can be trained to eliminate outdoors without the need for punishment and may soon learn to signal when it has to eliminate.

Handling mistakes

1. Punishment should not be used. The goal is to interrupt your puppy if it is caught in the act of eliminating indoors, and direct it to the appropriate location so that it can be rewarded when it eliminates there.
2. If you catch your puppy in the act of eliminating indoors, call the puppy to come and if it does not immediately cease say “no,” clap your hands, or pull on the leash to interrupt the behavior. Then take the pet outside and immediately reward upon completion.
3. If urine or stool is found on the floor after the puppy has eliminated, do not consider any form of correction since the puppy will not associate the correction with the elimination. You can prevent soiling in the home by closing doors or moving furniture to prevent access to the location, booby trapping the location with a repellent or motion detector, constant supervision of your puppy, and by consistently rewarding elimination outdoors.

Odor elimination

Clean up any odors from indoor elimination. Be certain to use enough product to get to the source of the odor. Use one of the products that have been specifically designed to eliminate pet urine odors (chemical modification, enzymes, bacterial odor removal).

Paper or potty pad training

1. While it is best to avoid indoor training techniques if the goal is to teach the pet to eliminate outdoors, this approach is sometimes necessary for apartment dwellers or when it is not practical to take the puppy outside frequently enough. For paper or potty training, the puppy can be confined to a room or pen with paper covering the floor opposite to its bedding, water bowl, and toys when it cannot be supervised.
2. Paper training can be combined with outdoor training so that the puppy learns that there are two appropriate places to eliminate. The puppy can be placed in its crate (which can be placed inside the pen) for short-term confinement and placed in the full pen or room with paper for longer departures.
3. Another option is to train the pup to eliminate indoors using a litterbox. Use the same techniques as for outdoor housetraining except that, instead of taking the puppy outdoors, it should be taken by leash to its litterbox and reinforced with praise and treats for litter use. If the litter is not used within 5 minutes, supervise the dog closely with a leash and take it back to the litter every 15 minutes until it is used.

Allowing time outdoors (in environments where appropriate)

Another option for some households is to allow the dog to spend time outdoors in a pen or run where it can eliminate. When indoors, close supervision is still required to prevent indoor elimination. Accompanying the dog outdoors and reinforcing outdoor elimination should also be incorporated into the training regimen.

(i.e., pre-elimination signs such as sniffing, squatting, circling, sneaking away), get the puppy's attention before elimination begins, and direct it to the appropriate location where it can be rewarded for eliminating.

A wire or plastic crate provides a safe confinement area where the pet can be placed at times that it cannot be observed. It should not be used for longer than about 5

hours on a daily basis. If the pet is alone for longer periods, it should be confined in an area that is about 1.5 × 1.5 meters (roughly 5 × 5 feet). Adult pets sometimes have difficulty adapting to a confinement area, especially if never previously used. These dogs should be introduced to confinement very gradually. Feeding in the crate, tossing toys in the crate, and hiding treats for them to find in the crate should all help the

pet adjust to confinement. Another option is to use a pen or small room such as a kitchen, bathroom, or laundry room to give the dog more space and more room to play with its toys. If the pet eliminates in inappropriate areas while the owner sleeps, but vocalizes excessively when crated at night, the owner might try placing the crate in the bedroom. Some dogs might even be allowed to have freedom in the bedroom during the night as long as the bedroom door is closed, and may learn to scratch at the door or vocalize at night when they need to eliminate.

Owners who must leave their dogs for periods longer than those during which they can control elimination should consider a dog walker. If this can't be done, then the dog can be confined to an area such as a room, pen, or indoor run. The dog's crate can be placed inside the room or pen. For short-term departures it can be confined to its crate, and for long departures the crate door could be left open. The floor should be covered with paper except for the area that contains the crate, toys, water, and bedding. The papered area can be made smaller as the dog begins to use a specific location, and then finally removed. Dogs that are paper-trained may generalize to other paper products in the home when they are available. Owners that prefer to have a permanent indoor elimination area should put the litterbox or potty pad inside the confinement area so that the dog has constant access to it when confined. However, they must be sure that access is still available when the dog is released from the confinement area.

Another consideration is to provide a doggie door so that the pet has access to a fenced yard when the owner is not home. For dogs that soil indoors even when a doggie door is available, the owner should build a small confinement pen around the inside door flap that is just large enough for the pet to rest. Most dogs will then use the door to go outside in order to avoid soiling the small indoor area.

See [Chapter 4](#) for environmental enrichment tips for the confined pet. See [Box 4.11](#), client handout #5, printable version available online, for details.

Provide a consistent feeding schedule

Maintaining a feeding schedule will influence the pet's elimination schedule. Food should be offered at consistent times each day for 20–30 minutes. The pet should be taken to its elimination area within 15–20 minutes of eating. The last meal should be finished 3–5 hours prior to bedtime. For adult dogs, the time during which most of the housoiling occurs will have some bearing on the feeding schedule that is established. If the pet is more likely to housoil during the day, the morning meal should be much smaller or feeding limited to the afternoon and evening when the owners are home to take the dog out to eliminate. Adult dogs that are soiling might be fed a lower-fiber diet to reduce the amount of stool produced. Water should be available all day and taken up just prior to bedtime unless there are medical reasons for which restriction of nocturnal water intake would be inappropriate.

Transition

If there has been no inappropriate elimination for at least 4 weeks (longer for adult dogs), the family may begin to

decrease the amount of supervision and confinement gradually. The family must determine their dog's limit for how long it can retain urine and stool so that they always ensure the pet is taken to its elimination site well before this limit is reached.

Mistakes happen

If the owner sees the pet eliminating or beginning to eliminate in an inappropriate location, it should immediately be interrupted with a command to come, a verbal "No!," hand clap, a noise of sufficient intensity or a gentle pull of a leash. The tone or volume of the interruption should not be strong enough to elicit a fear response. Any area in the home where the puppy has eliminated must be thoroughly cleaned and treated with an effective odor neutralizer.¹⁰ Carpeting should be soaked with the product since spraying the surface does not get to all parts of the odor. Access to previously soiled areas should be prevented when the owner is not available to supervise by closing doors or moving furniture over those areas. The pet might also be deterred from eliminating in the area by changing the substrate to one that is less appealing (e.g., plastic drop sheets, nubs-up plastic carpet runner) or by placing environmental deterrents such as motion-activated alarms and sprays or double-sided sticky tape in the area. Most pets prefer to avoid eliminating in areas where they eat, sleep, or play. Therefore, food, water bowls, bedding, or toys might discourage elimination if placed in previously soiled areas.

Punishment

This is potentially the most problematic and most overused approach to housetraining. It is not necessary to use punishment to housetrain a dog, but it should be discussed with the family, since it is commonly misused in an attempt to train the pet. Physical punishment, strong scoldings, and rubbing the pet's nose in urine or feces are ineffective and inhumane. With punishment the dog may learn to:

- avoid further elimination in that location
- avoid further elimination in that location when the owner is present
- avoid all elimination in the presence of the owner
- avoid or become aggressive toward the owner as a result of fear.

Signaling

Owners often indicate that their dogs do not give any sign or "ask" them to go outdoors. Signaling may be learned by repeated high-level reinforcement of outdoor elimination. These dogs may then engage in behaviors to get the owners to notice that it's time to go outdoors (e.g., going to the exit door and scratching or vocalizing). On the other hand, some dogs learn to signal because of owner interruption techniques. This happens when the owner supervises the pet indoors and startles or disrupts the dog as it begins to eliminate. The consequence of these actions is that the dog will attempt to sneak away to eliminate when the family member is watching. However, when the dog cannot sneak away because it is leashed next to the person it may begin to show signs of conflict and anxiety (whining, circling, barking,

pacing). If the owner consistently takes the pet out to eliminate each time these behaviors are noted, the pet will eventually learn to perform them actively to be taken to the elimination area. The key to training the dog to signal is to identify these signs and take the dog immediately to its elimination site where it is immediately rewarded for elimination. Over time many dogs will learn to signal in some manner (whining, pacing, barking, or even going to the exit door) when it feels the urge to eliminate.

Crate soiling

Causes of soiling when confined to a crate include:

- inadequate opportunity to eliminate prior to confinement
- confined too long
- medical problems causing increased urgency or frequency
- fed just prior to confinement
- diet change (high-fiber diet, diet that causes polyuria/polydipsia)
- anxiety (separation or confinement anxiety, noise phobia).
- No other elimination area options were available (e.g., puppy mill, pet store).

Management

- Ensure the pet eliminates prior to confinement.
- Confine for shorter periods, allow out midday, use a dog walker.
- Treat medical problems.
- Feed less and earlier prior to confining.
- Switch to lower fiber diet if possible.
- Treat anxiety (decrease hyperattachment, crate training, pheromones, medication).
- Switch from a crate to exercise pen, dog run, small room, or gated hallway, and possibly consider paper training

Housoiling problems

Eliminating in the home can be due to a variety of reasons. Medical problems may result in housoiling and can occur at any age, but tend to occur with higher frequency in the older pet. The most common causes in young dogs are inadequate training, submissive urination, and excitement. During adulthood, marking, separation or confinement anxiety, and cognitive dysfunction syndrome can result in inappropriate elimination in the home. Housoiling may be due to changes in the pet's environment, family, or schedule, a failure of owners to continue the housetraining regime, or a change in the pet's feeding schedule or diet.

Diagnosis

When working up a housoiling problem, medical problems must first be ruled out. If no health issues are identified or the soiling continues once medical problems are resolved, a complete history must be obtained in order to sort through

Box 18.2 Differential diagnosis for housoiling

- Inadequate training
- Submissive, excitement, conflict urination
- Marking
- Separation distress
- Medical problems
- Management-related problems
- Location or surface preferences
- Learned preference for an unacceptable location or surface

the various behavioral causes of elimination in the home (Box 18.2). It is important to note that some medical problems might not be entirely resolved (chronic kidney disease, recurrent calculi), and that even when medical problems are resolved, behavioral signs may persist (e.g., acquired surface or location preferences).

Medical causes of housoiling

A medical workup should be done to ensure that there is no physiological reason for the problem (Table 18.1). This is particularly true when working with older pets that which might a relatively higher incidence of medical problems. The patient should receive a thorough physical exam, neurological examination, and assessment for mobility and pain. The medical history should include information about water consumption, diet, pica, the volume and frequency of elimination, pain during elimination, mobility or sensory issues, any change in appearance of the stool or urine, and a description of the act of elimination. Also inquire about any medication the pet might be taking that might affect the frequency of elimination or the characteristics of the stool. A minimum database would be a complete blood count, biochemical profile, and urinalysis to start. For urine soiling, endocrine testing (e.g., adrenal), imaging (e.g., ultrasound, radiographs) and a water deprivation or desmopressin response test might also be indicated. For fecal soiling, stool should be evaluated for parasites and additional testing would be indicated if stool consistency or frequency is affected, e.g., pancreatic function, colonoscopy.

Any medical problem that causes an increased frequency or volume of urination or defecation, discomfort during elimination, or incontinence can trigger a housoiling problem. Impaired cognitive function can lead to confusion, disorientation, poor perception, and loss of learned behaviors, including housetraining. Alterations in mobility due to arthritis or neuromuscular disorders can also alter elimination habits. Sensory decline could have an impact on the dog's ability to navigate and access its elimination area. For marking behavior, any medical condition contributing to an increase in anxiety (e.g., endocrinopathies) and tumors that increase androgens, e.g., interstitial cell tumors, should be ruled out (Table 18.1).

Medical problems can occur at any age, but should be considered in any puppy that is refractory to housetraining, adult dogs that have previously been housetrained, and senior pets that begin to urinate indiscriminately (see Chapter 6 for medical differentials for behavior problems and Chapter 13 for the effects of aging on behavior).

Table 18.1 Medical causes of housesoiling

Medical causes of fecal housesoiling	Medical causes of urinary housesoiling
• Increased volume of feces	• Increased volume of urine – polyuria
• Maldigestion/malabsorption	• Renal, hepatic, hypercalcemia, pyometra
• High-fiber diets	• Hyperadrenocorticism, diabetes
• Increased frequency of voiding	• Increased frequency of voiding
• Colitis, diarrhea, and underlying diseases	• Urinary tract infection – calculi – bladder tumors
• Reduced control – incontinence	• Reduced control – incontinence
• Compromised neurologic function	• Compromised neurologic function
– Peripheral nerve impairment	– Peripheral nerve impairment
– Spinal impairment	– Spinal impairment
Sphincter impairment	Sphincter impairment/incompetence
• Painful defecation – Arthritis/anal sacculitis/colitis	• Painful urination – pollakiuria - Arthritis, urinary tract infection, calculi, prostatitis
• Cranial disease / central control (tumors, encephalitis, infection)	• Cranial / central control (tumors, encephalitis, infection)
• Sensory decline	• Sensory decline
• Cognitive dysfunction syndrome	• Cognitive dysfunction syndrome
• Altered mobility – arthritis/neuromuscular	• Altered mobility – arthritis/neuromuscular
• Medications altering stool consistency	• Medications altering urination frequency or volume
	• Marking – Increased anxiety, e.g., endocrinopathy – Hormonal, (e.g., androgen-producing tumors, such as interstitial cell tumor)

Behavioral history

Once underlying medical problems have been ruled out or treated, some time must be spent gathering sufficiently detailed historical information in order to formulate an accurate diagnosis, prognosis, and treatment plan. You will want to know where the pet is housesoiling, whether it is urine, stool, or both, as well as a description of the act of elimination. Any information the owner can provide concerning the initial onset of the problem may prove helpful in understanding the cause of the housesoiling as well as deciding what to do to prevent recurrence. Identifying the substrates or locations where the pet soils can help to determine where the pet might prefer to eliminate and what will need to be managed. You will want to find out if there were any major changes in the pet's environment, the owner's schedule, duration of owner departures, or its relationship with the owner that preceded the appearance of the housesoiling. An assessment should be made of the pet's appetite and eating habits. Some pets are relatively intolerant of diet changes, so switching food can cause diarrhea, increased frequency of defecation, and housesoiling. Changing an obese dog to a high-fiber diet can cause an increase in the volume of stool produced and a need to defecate more frequently. If the pet is not allowed outdoors more often, it may subsequently defecate in the home.

Information about the home environment, family members' schedules, and individual relationships with the pet will be helpful. Evaluate relationships between the dog

and family members to determine whether they might be contributing factors and if compliance is likely to be an issue. A history of housesoiling that started after a change in the amount or quality of time spent with the pet may suggest an underlying separation anxiety problem. Anxious behavior when the owner prepares to depart, following or clingy behaviors when owners are at home, and an absence of housesoiling when the pet has access to the owner are supportive of the diagnosis. However, video tape or movie clips are generally best at confirming whether the problem is due to anxiety.

Marking should be a strong consideration if there are specific territorial or anxiety-provoking stimuli that typically precede incidents of urination by the pet, especially if the dog is intact. Visits by other pets, visits by owners of pets, or visits that are disruptive, such as overnight visits by guests and holiday celebrations, may trigger marking behavior. Marking behavior is generally displayed as small amounts of urine "sprayed" onto vertical surfaces; however, horizontal surfaces or objects may be a target, especially if the pet is stimulated by particular odors (e.g., baby blankets).

It is always important to ask if the housesoiling has taken place in front of a family member. In most cases, the pet eliminates out of sight of the owner. If the pet is soiling directly in front of the owner, there are a number of possibilities:

1. The pet lacks physiological control:
 - diarrhea
 - lower urinary tract disease

- incontinence
- cognitive problems
- 2. The pet lacks emotional control:
 - submissive
 - excited
 - frightened
- 3. Training and other issues:
 - never corrected for soiling in front of a family member
 - the pet signaled, but the owner was distracted, unaware.

Prognosis

The prognosis for full resolution is generally very good for dogs with elimination problems due to incomplete house-training, assuming the family is willing and able. For other problems the prognosis varies with the diagnosis, including whether underlying medical problems can be resolved.

Variables that determine the prognosis for successful treatment include duration of housesoiling, the frequency of soiling, the number of areas and surfaces soiled, the mental state of the pet, and the schedule of the family. The prognosis is good for problems of short duration, low frequency, few soiling locations, and no untreatable medical problems. The prognosis is also better if the dog has been accustomed to a crate or confinement room, there is an area in the home where confinement can be successfully implemented, and when the owner is sufficiently available to supervise and train outdoor elimination. Often, the critical factors are owner compliance and consistency.

General principles for treating housesoiling problems

For the most part, housesoiling is addressed using the same principles as outlined above for housetraining (Box 18.3).

Box 18.3 Summary of treatment for canine housesoiling

- Diagnose and treat or rule out medical problems
- Treat underlying emotional issues (e.g., separation anxiety, territorial arousal)
- Choose a location and substrate for elimination that is desirable for pet and owner
 - Take regularly to location
 - Immediately reinforce (praise, treats, play) the pet when it eliminates in an appropriate area
- Control the feeding schedule to control elimination schedule
- Supervision
 - to train/reinforce desirable behavior
 - to prevent/interrupt (e.g., auditory, leash) undesirable behavior
- Prevent resoiling at previously soiled areas
 - Prevent access/confinement
 - Change substrate
 - Odor elimination
 - Avoidance conditioning (unpleasant association with area)
- Focus on rewarding desirable behavior, not punishment of undesirable behavior

However, once new locations, new substrates, and new elimination times have been established, they can be difficult to correct. When dogs relieve themselves, they do not perceive that eliminating in the area is unacceptable or wrong. In fact, the net effect may be one of reinforcement (i.e., emptying the bowel or bladder). The behavior may then become conditioned as the pet establishes new surface and location preferences, as well as a new elimination schedule. A most important key to effective retraining is constant supervision. This allows the family to prevent or interrupt inappropriate elimination and direct the pet to substrates and locations that are suitable for both the pet and family. The pet can then be immediately rewarded for eliminating with lavish praise and a food treat. At any time there is the potential for soiling and the owner cannot supervise, access to the areas or surfaces must be prevented. If confinement is not an option, some pets will tolerate diapers or diaper-type products.

Submissive, conflict, and excitement urination

Some dogs are unable to control urine voluntarily when fearful or responding submissively to social stimuli. Many cases are conflict-induced in that the dog is in a situation of uncertainty or competing motivation as to how to greet effectively (approach/withdrawal). Attempts to punish will aggravate fear and conflict. Owners that are upset or show their displeasure add to the dog's anxiety and conflict since the pet has little or no control over the behavior. Dogs that are extremely excited at greeting may also be unable to control urine during greeting. Although these problems can be seen in dogs of any age, they are most common in puppies and young female dogs. Problems are most likely to occur when owners or strangers meet or greet the pet, and the bladder is particularly full. In addition, young female puppies may have poorer sphincter control that usually improves with age particularly, if family members and visitors learn to alter their methods of greeting to be positive, predictable, and nonthreatening to the dog.

Diagnosis and prognosis

Submissive and conflict urination

The pet voids urine during greeting or when reached for or approached. Body postures and facial expressions may include ears laid back, horizontal retraction of the lips, avoidance of eye contact, and lowered body posture. Some dogs will lower into a recumbent position on their sides or backs while urinating. These submissive displays are typically used as appeasing gestures to avoid agonistic encounters. They occur in response to human behavior that seems assertive or threatening to the pet. Behaviors such as patting or standing over the puppy, direct eye contact, deep or harsh tone of voice, verbal or physical discipline are typical triggers. Medical differentials might include ectopic ureters, urinary incontinence, or lower urinary tract disease.

Some of these puppies may be confused or conflicted (i.e., competing motivations between the desire to approach and greet or whether to withdraw and avoid). Conflict arises when a puppy is motivated to greet but uncertain whether the outcome will be positive or negative. If puppies are

occasionally disciplined for overexuberant greeting behavior, are threatened or punished by the family for undesirable behavior, or display anger or frustration over the uncontrollable urination, the puppy may become increasingly more conflicted with each greeting.

Excitement urination

These dogs also void urine during greeting. The puppy is highly aroused, exceptionally active and tail vigorously wagging as it loses control of its urine during enthusiastic greetings.

Treatment

The first step is to identify all stimuli, interactions, or situations that trigger the behavior and then avoid them. Owners and visitors should greet in a calm and predictable manner, and reinforce only behaviors that are desirable and incompatible with submissive, avoidance, or excitable behaviors (response substitution). At first it might be best to confine the puppy when visitors arrive and to allow a controlled greeting only after they get settled and the puppy is sufficiently calm. Bringing the puppy out to greet on leash or leash and head halter can help to calm and prevent overenthusiastic behaviors. The puppy should be ignored until it can calmly interact in an acceptable manner. Tossing some treats or a toy on the floor for the puppy to retrieve can take the focus away from the greeting. Alternately the owner or visitor could offer treats while avoiding eye contact and immediately stop and back slightly away if the puppy begins to get aroused or begins to withdraw. The treat can be reintroduced if the puppy again approaches calmly. Stroking the dog from the side and quiet verbal encouragement can be added while offering rewards. Avoid standing, reaching for the puppy, patting the top of the head, and loud or overly enthusiastic tone of voice. Clicker training is also an effective way to reward calm and desirable behaviors. The goal is to focus on training and rewarding behaviors that are incompatible with fear, submission, conflict, or excitement such as sitting calmly, approaching calmly, or fetching a toy. Greetings should continue to be avoided with people who cannot or will not follow the prescribed program. Another option for dogs that eliminate when the family arrives home is calmly but immediately to take the puppy outdoors without giving any attention until it has a chance to eliminate. Consider a game of fetch or some food lure training until the puppy can be settled enough to be brought back indoors. Physical punishment and even the mildest verbal reprimands should be resolutely avoided. The use of alpha-adrenergics (such as phenylpropanolamine) or a tricyclic antidepressant (such as imipramine) might also be considered as an adjunct to behavioral therapy to increase sphincter tone for refractory cases.

Prevention

Early recognition of this problem and prompt counseling can provide the owners with an opportunity to avoid those interactions that aggravate the problem and focus on rewarding greeting behaviors that do not incite urination. Loud,

harsh, or threatening behaviors, anger, discipline, or punishment as well as overexuberant greetings should all be avoided since they increase submission, avoidance, and conflict.

The pet should be taught to sit and stay during all interactions (learn to earn) and during training sessions, and then should be asked to sit/stay whenever it approaches anyone. This can be used to promote a calm, consistent, relaxed ritual for meeting people.

Marking

In most cases, marking involves an intact male urinating on an upright object in response to a territorial stimulus or stressful situation. It is most likely to occur on or near odors and pheromones left by other dogs. The volume of urine is usually less than what is typically voided during normal micturition. Since marking is a means of olfactory communication between dogs, marking of unfamiliar territories and overmarking of another dog's scent is normal behavior. Marking can be reduced 70–80% by castration.⁹ Marking in males that were castrated prepubertally may be due in part to in utero masculinization of the brain. Spaying is recommended for female dogs that mark during estrus. Marking may also occur on horizontal surfaces, especially if they are socially significant. For example, dogs may mark the bedding of a cat or dog, laundry, or some sweaty exercise clothing or sporting items (e.g., hockey equipment bag). Although specific scents are often targeted, some dogs will target new furniture or prominent upright surfaces even if recently cleaned. In these cases, the absence of a familiar odor may be the motivation. Dogs may also mark in situations of conflict or frustration, or when anxious.

Diagnosis and prognosis

Medical problems should be considered, especially in neutered dogs that begin marking as adults. A retained testicle may begin to produce testosterone as the dog passes sexual maturity. Interstitial cell tumors in a retained testicle or testicular remnant could be involved in testosterone production. Although baseline testosterone may be high, a gonadotropin-releasing hormone (GnRH) (Cystorelin) response test comparing baseline testosterone to a sample drawn 90 minutes after 2.2 µg/kg IM GnRH administration may be more sensitive.

Medical conditions that contribute to anxiety and those that might lead to an increased frequency of urination should also be ruled out; therefore unless there are other clinical signs that might warrant further evaluation, a minimum baseline should include urinalysis, complete blood count, biochemical profile, and perhaps thyroid assessment. When castration is not an option or has not been successful, the prognosis is variable. Generally, most cases can be successfully controlled with effective supervision and environmental management to prevent access to targets of marking. However, a determination of when, where, what, and why the dog is marking is needed if significant improvement is to be achieved. For example, marking related to conflicts between household dogs, separation anxiety, or changes in the family dynamics or routine is

likely to improve only if the underlying cause is resolved. For dogs that mark indoors, the locations and objects that are marked should give insight as to why the pet might be marking. Marking near doors and windows, or on a visitor's possessions, suggests a territorial problem.

Treatment

Castration is likely to be effective for most forms of marking. Marking can be managed or resolved by identifying and avoiding those stimuli and events that incite marking or keeping the dog away from locations or objects that are likely to be targets of marking. For example, if the problem is the sight, sounds, or odors of dogs, every effort should be made to reduce exposure by preventing other dogs from visiting, keeping stray dogs off the property, or limiting the pet's access to the doors and windows where the stimuli are most intense. If other dogs cannot be prevented from wandering onto the property, urine residue must be removed with enzymatic cleaners from around doors, windows, or other areas where dogs have marked. When kept under supervision, a leash and head halter or auditory cue can be used successfully to interrupt a dog that is marking or direct it away from odors and locations where marking occurs. At all other times the dog should be prevented from accessing areas or objects it might mark or deterred from accessing the area with avoidance devices such as motion-activated alarms. Alternately the dog could be placed outdoors into an enclosure where it is permitted to mark. A stake might be driven into the ground at the desired location and the dog reinforced for marking the stake. Dogs that mark when visiting or traveling should be closely supervised on leash, confined to a carrier or crate, left at home or boarded. Dogs that mark when visitors arrive, new additions are made to the family (e.g., baby, spouse), or changes are made to the household itself (e.g., renovations) may require time to adapt and make positive associations using toys, treats, and play. When new furniture or any object with a novel odor is first brought into the home, access should be prevented except under direct supervision until the pet becomes familiar with them. Dog-appeasing pheromone (spray, collar, or diffuser), medications (selective serotonin reuptake inhibitors, tricyclic antidepressants) and natural supplements ([Chapter 9](#)) might be helpful for decreasing the reactivity of marking dogs.

Dogs that mark new objects left on the floor can sometimes be successfully treated using training sessions that involve placing an object, such as a box or grocery bag, on the floor. The pet is observed from out of sight and, when it is just about to mark, it is interrupted with a remote-activated spray collar (e.g., SprayCommander).

Separation distress

Some forms of elimination during the owner's absence are a result of anxiety, fears, and phobias. This may be due to anxiety about being confined (barrier frustration), noise and storm phobias, and separation anxiety. An important clue that differentiates separation anxiety-related elimination from housesoiling due to other causes is that these pets will often eliminate in the home every time the owner leaves,

even when the absence is of very short duration, and in spite of the fact that the pet has eliminated in an appropriate area just prior to the owner's departure. Lower urinary tract disease would be an important ruleout for this constellation of signs. See [Chapter 12](#) for the diagnosis and treatment of separation anxiety.

The geriatric dog

When senior dogs begin to soil, medical conditions affecting urine and stool frequency and control, sensory deficits, altered mobility, and cognitive dysfunction must first be ruled out. Housetraining requires voluntary control of the detrusor reflex at a cortical level. As the dog ages, physical and physiologic changes occur in the central nervous system that result in a general decrease in cerebral function. Impaired cerebral function can affect the geriatric pet's housetraining by reducing voluntary control of the emptying reflex and by reducing awareness. Loss of voluntary control can result in urge incontinence (the dog has a warning that micturition is about to occur but cannot stop it) or unconscious urination (there is no awareness or control). Reduced awareness may also result in the pet being less cognizant of its external environment, making it less likely to signal to the owner when it has to eliminate. For further discussion of cognitive dysfunction, see [Chapter 13](#).

As a result of organ function decline (renal, hepatic), endocrinopathies (e.g., Cushing's, diabetes) and an increase in cystitis, pyelonephritis, and prostatitis with declining immune function, many geriatric dogs require more frequent access to elimination areas. Therefore access to a doggie door, closer observation by the family, a midday walker, or indoor potty training may be needed to help manage housesoiling in geriatric pets. Problems such as arthritis, muscle atrophy, and weakness make navigation of stairs more difficult. Ramps and carpeted stairs should make the dog less reluctant to take a trip outdoors. Medication may be necessary to reduce pain and stiffness and make it easier for the pet to get to its elimination area. Cold intolerance can be a problem for some older pets, which might reduce their desire to go outdoors to eliminate in colder weather. Since senior pets may be less able to adapt to stress, change should be kept to a minimum or steps should be taken to prepare the dog gradually.

Summary

Medical reasons for a break in housetraining should always be considered when working up the dog that is housesoiling. Unresolved medical problems will cause any attempts to correct the behavior problem to fail. However, even if medical problems can be resolved, new surface preferences, locations, and schedules that lead to housesoiling may persist. The basic approach to treatment involves correcting the factors that initiated the problem, using supervision and rewards to retrain desired behavior, and preventing the undesirable behavior from occurring for a long enough period of time to re-establish regular elimination in the desired location.

CASE EXAMPLES

Case 1

Herman, a 4-month-old Dachshund puppy, was urinating in his crate and throughout the house, but never in the presence of the owner. The puppy would eliminate outdoors in the yard and the owner would give appropriate rewards. He would regularly defecate outdoors morning and night and the owners reported no inappropriate defecation. He would not eliminate indoors if a family member was closely supervising, but would occasionally sneak away and urinate in another room. When the owners found the soiled area, they would immediately take him to the spot, put his nose in the urine and verbally reprimand him. Herman slept in the bedroom with the owners during the night. On occasion, he would go downstairs to urinate while they slept. On weekdays, Herman was left in a cage in the laundry room, from about 8.30 a.m. to 4.00 p.m., and on most days the owner would find urine in the cage. Whenever the owners found urine in the cage, they would yell at him and send him outdoors in the yard where he was ignored for 30 minutes. The owners were convinced that Herman knew that he was misbehaving because he would act "guilty" whenever they found urine in an inappropriate location.

Since Herman was being left alone for 7.5 hours daily he could not control his urine until the owners arrived home. He had learned to avoid the owners when eliminating, which is why he would sneak away when he felt the urge to urinate. He would act fearful (which the owners assumed to be guilt) whenever the owners found urine because he had learned that he would get punished and berated. It was explained to the owners that unless he was deterred in the act he could not understand the consequences of his actions. However, even with effectively timed punishment, he would merely avoid urinating indoors when the owners were supervising, which he had already learned.

To provide the puppy with an opportunity to eliminate within 4–5 hours, the owners arranged with a dog walker for Herman to have an additional walk at lunch hour. Since the family wished to continue confining Herman when they were out, a cage training guide was provided to encourage positive association with crate confinement. The cage was relocated to the corner of the bedroom where the puppy normally slept, and the door was kept closed so that he could not wander downstairs at night. The owners continued to reward the puppy for outdoor elimination and were instructed to keep him in sight when indoors so that he could not sneak away. Since Herman would seldom eliminate in the first 2 hours after eliminating outdoors, the owners could be somewhat lax about supervision for the first hour after the walk but would keep him in sight or put him in his crate with a chew toy if an hour had passed. With the noontime walk, Herman ceased urinating in his crate within a week and would sleep through the night in his crate. With increased supervision and withdrawal of punishment, all soiling was resolved by 7 months of age but noon walks were continued since they provided Herman with a needed opportunity to eliminate.

Case 2

An 11-month-old female spayed Bichon frisé would eliminate indoors whenever the owner did not supervise the dog. Even if she had been outdoors recently she might sneak away to eliminate. When the owners were away from home, the dog was left in the kitchen where she eliminated on paper. While the owners were outdoors with the dog, she would not eliminate in their presence. During the first 2 months of ownership the owners would supervise the dog and scream or hit her when she began to eliminate indoors. They would then throw the dog outdoors unsupervised. At times, the dog had managed to sneak away from the owners and eliminate in other rooms.

The dog had learned to eliminate indoors on paper and had never learned to eliminate outdoors. In fact, because of the way punishment had been used, the dog was fearful of eliminating in the owners' presence, regardless of whether she was indoors or out.

The first step was to teach the dog that it would receive valuable rewards (food treats, play toys) whenever she eliminated outdoors. This proved to be extremely difficult since the dog was fearful of eliminating in the owners' presence. Therefore the owners were instructed to accompany the dog outdoors but to ignore her until she eliminated (regardless of how long it took) and immediately to call the dog for a treat and play. As soon as the dog eliminated and expected rewards when the owners were present, they were instructed to add a "go pee" command as urination began and to reward her immediately upon completion with a piece of meat. When the dog was indoors, she used the paper when confined to the kitchen but would still occasionally sneak away to urinate. This problem was resolved by attaching a 3-meter (10-foot) leash so that she could be kept in sight and directed quickly outdoors when pre-elimination signs were seen. In time, the dog responded quite well to elimination on command and eventually learned to eliminate primarily outdoors.

One year later the owners called because they had successfully retrained the dog to urinate exclusively outdoors and had ceased using the paper 6 months earlier. However, she had recently begun to soil in the home. Therefore they had reintroduced confinement with paper when out, but she would continue to sneak off and urinate between her afternoon and evening walks and overnight. The owners mentioned that the dog was urinating much more frequently. A medical workup revealed hematuria but no bacteria, with two urinary calculi of about 1.5 cm diameter and a number of small crystals identified on radiograph. After surgical excision all stones were found to be calcium oxalate and dietary recommendations were implemented to attempt to reduce recurrence. Within 1 month of confinement with paper when the owners were away, leash supervision when the owners were home, and regular outside walks with rewards for urination, soiling had again ceased.

References

1. Bamberger M, Houpt KA. Signalment factors, comorbidity, and trends in behavior diagnoses in dogs: 1644 cases (1991–2001). *J Am Vet Med Assoc* 2006;229:1591–601.
2. Salman MD, Hutchinson J, Ruch-Gallie R, et al. Behavioral reasons for relinquishment dogs and cats to 12 shelters. *J Appl Anim Welfare Sci* 2000;3:93–106.
3. New JG, Salman MD, Scarlett JM, et al. Shelter relinquishment: characteristics of shelter-relinquished animals and their owners compared with animals and their owners in U.S. pet-owning households. *J Appl Anim Welfare Sci* 2000;3:179–201.
4. Patronek GJ, Glickman LT, Beck AM, et al. Risk factors for relinquishment of dogs to an animal shelter. *J Am Vet Med Assoc* 1996;209:572–81.

5. Corridan, C.L. The role of owner expectation in development of a successful human: dog bond. Doctorate thesis, University of Lincoln. 2010.
6. Lord LK, Reider L, Herron ME, et al. Health and behaviour problems in dogs and cats one week and one month after adoption from animal shelters. *J Am Vet Med Assoc* 2008;233:1715–22.
7. Herron ME, Lord LK, Hill LN, et al. Effects of preadoption counselling for owners on house-training success among dogs acquired from shelters. *J Am Vet Med Assoc* 2007;231:558–92.
8. Melese-d'Hospital P. Eliminating urine odors in the home. In: Voith VL, Borchelt PL, editors. *Readings in companion animal behavior*. Trenton, NJ: Veterinary Learning Systems; 1996. p. 191–7.
9. Neilson J, Eckstein RA, Hart BL. Effects of castration on problem behaviors in male dogs with reference to age and duration of behavior. *J Am Vet Med Assoc* 1997; 211(2):180.
10. Melese-d'Hospital P. Eliminating urine odors in the home. In: Voith VL, Borchelt PL, editors. *Readings in companion animal behavior*. Trenton, NJ: Veterinary Learning Systems; 1996. p. 191–7.

Recommended reading

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| <p>Ross S. Some observations on the lair dwelling behaviour of dogs. <i>Behaviour</i> 1950;2:144–62.</p> | <p>Scott JP, Fuller JL. <i>Genetics and the social behaviour of the dog</i>. Chicago, IL: University of Chicago Press; 1965.</p> | <p>Voith VL, Borchelt PL. Elimination behaviour and related problems in dogs. <i>Compend Continuing Educ</i> 1985;7:538.</p> |
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Feline housesoiling

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Housesoiling is the most common behavior problem for which cat owners seek assistance¹ and a major reason why some cats are abandoned or euthanized.² Housesoiling (which consists of inappropriate toileting and urine marking) was the most common feline behavior complaint in a study at three behavior practices, comprising 58% of 300 cases. Of these, 70% were due to inappropriate toileting, 30% were marking, and 13% were exhibiting both behaviors.³ At the behavior service at the Veterinary College in Barcelona, the most common housesoiling diagnosis was litter aversion in 63.4% of cases.⁴ Most of the housesoiling involved urination (59%), with urination and defecation at 32%, and defecation only at 9%. Persian cats were most frequently presented for elimination problems, which is consistent with the findings of other studies.^{5,6}

In order to treat housesoiling in cats effectively, it is essential that the practitioner first determine whether the problem is inappropriate toileting or marking. Yet in one study only 69% of veterinarians inquired about whether the soiling was on vertical or horizontal surfaces.⁷ Inappropriate toileting is generally due to factors related to the litter site (avoidance of the box, litter, or area), preferences for other surfaces or sites, and problems accessing the site (location, other pets).⁸ Urine spraying occurs when a cat backs up to a vertical surface and directs a stream of urine toward an object or

surface. More rarely, a cat may mark on horizontal surfaces. Urine marking may be caused by territorial competition, anxiety-evoking situations, or arousing events and may be stimulated by novel sights, sounds, or odors, especially from other cats. When alterations in the environment lead to stress or anxiety, marking may be an adaptive behavior for maintenance of social organization. Although sexually intact cats are most likely to spray, the problem is reported in 12% of neutered males and 4% of spayed females.⁹ While it is essential to rule out medical causes for any behavior problem, this is especially true for inappropriate toileting since any medical condition affecting lower urinary tract health, urine or stool consistency, volume, or control can cause soiling. To make a diagnosis, identify the cause(s), develop a prognosis, and design a treatment plan that is appropriate for the cat and household requires both the medical workup and a comprehensive behavioral history.

Multicat households can pose a challenge since it may not be immediately evident which cat is soiling. Separation for a few days or weeks may be necessary to find the perpetrator; however, while separation may be successful at identifying the marking cat, it can change the dynamics of the household and alter elimination habits. Another approach is to give fluorescein¹⁰ orally (0.5 mL of a 10% solution or the ends of six strips of 6 mg fluorescein into gel caps) and assess

any soiled areas with a Wood's lamp or "black light" for fluorescence, which will last up to 24 hours. However, one study found that fluorescein can stain carpet and may not fluoresce in acidic urine.¹¹ Therefore the best option appears to be monitoring with a webcam, monitor, or recording device to catch the culprit as well as view the soiling behavior, which might give clues as to cause. Bright-colored, *nontoxic* crayon shavings or nontoxic arts and crafts glitter can be added to canned food to identify which cat is fecal soiling.

Litterbox training

Since most cats prefer to dig prior to elimination, perform a burying ritual after elimination, and prefer something absorbent, providing a litter that is kept clean, easily accessible, and has a texture amenable to the cat is all that is usually necessary. Of course, the kitten must be prevented from accessing other similar substrates, such as plant soil. Litter should be scooped daily and changed weekly. The presence of another cat or dog in the home or the location of the litter box may be a factor in preventing or denying access to it. Kittens that do not use their litterboxes consistently should be assessed for medical problems (Box 19.1, client handout #15, printable version available online) and Table 19.1).

Diagnosis

Causes of housesoiling fall into three categories: (1) medical problems; (2) inappropriate toileting; and (3) marking. Medical problems may incite inappropriate toileting which may continue even after the medical problem is resolved if avoidance of the previous litter and new preferences have been learned. Inappropriate toileting can be divided into: (1) substrate preferences and aversions; (2) location preferences and aversions; and (3) aversion due to other factors (the box, unpleasant events, cleanliness).

Medical considerations

After identifying the culprit, the next step is a thorough medical workup. Housesoiling can be due to any medical problem that causes an increased volume of urine or stool, increased discomfort during elimination, decreased control, or diseases that affect cortical control. A thorough physical examination and appropriate laboratory tests should be performed on all suspect cats. The most common medical causes of soiling in young cats are feline interstitial cystitis (FIC) and uroliths, while in older cats neoplasia and bacterial infections become more likely.¹² In fact, in a retrospective study of cats with problem elimination, 60% of the cats had a history of FIC/feline lower urinary tract disease.¹³ Urinary tract disease does not appear to be correlated with urine marking behavior.¹⁴ However, systemic illnesses leading to behavioral signs could contribute to marking by altering hormonal states or increasing anxiety (e.g., hyperthyroidism). Defecation outside the litterbox may be due to any bowel disease that affects urge, frequency, or control.

If the cat is urinating away from the box, a urinalysis, assessment of water intake, and urine frequency should be

the minimum workup, although a complete blood count and biochemical profile may also be indicated as part of the baseline evaluation. Since urinary conditions such as FIC may occur intermittently and cause transient signs, repeat urinalyses may need to be performed. In marking cats, evidence of masculinization such as penile barbs or odorous urine might be indicative of the presence of male hormones arising from a retained testicle or testicle remnant.¹⁵ Standardized methods for evaluating testosterone levels in response to gonadotropin-releasing hormone have been developed (see Chapters 6 and 15). For inappropriate defecation, a stool evaluation, along with an assessment of eating, drinking, and elimination habits would be the minimum workup. The owner should be questioned about signs of diarrhea, blood/mucus in the stool, hard stools, and discomfort while defecating (Box 19.2). Additional diagnostic tests might then be indicated based on clinical signs, physical examination, and laboratory findings, including thyroxine, viral testing, radiography, ultrasonography, and possibly even endoscopy (with biopsy if indicated). See Chapter 6 for more details.

History

Once medical problems have been ruled out, the behavioral history is the most critical diagnostic tool for determining the cause of the soiling as well as to formulate an appropriate treatment plan. (See C5 behavior history form client form 3 as well as 18 and 20 on the website). A home visit can be extremely helpful in evaluating the environment with respect to litter stations, feeding stations, cleaning, play and resting areas, as well as the locations of soiling. For example, if the cat is marking in the home in response to visits by neighborhood cats, you may discover clusters of soiled areas around windows or doors where outdoor cats call. If the behavioral assessment does not include a housecall, details about the environment will need to be gathered by having the owners take video tapes of their home and problem areas or by having the owners make a diagram of the home, indicating litterbox locations, feeding stations, sleeping and scratching locations, and where the cat soils.

The history should then focus on specific questions about the problem. First, determine whether the soiling is horizontal, vertical, or both; urine, stool, or both; and if the litters are used intermittently or not at all. Urine spraying is when a cat backs up and directs a stream of urine onto a vertical surface. Marking cats generally continue to use litter for urination and defecation (although some cats will present with both inappropriate toileting and marking). In a small number of cases, a cat will urinate on horizontal surfaces as a marking behavior. The behavior is typically triggered by territorial or stressful situations. Ask the owner if there are situations or environmental stimuli that precede marking incidents. Look at the locations of elimination as a possible clue to what might be an inciting factor (e.g., doors, windows, a dog's bedding area). Explore social or environmental changes that might have affected the cat (see Chapter 21). If the cat is eliminating inappropriately on horizontal surfaces, the reason is commonly either an environmental issue that causes the cat to avoid the box, or one that attracts it to an area away from the box. While many cats avoid the box for urine, stool, or both, some cats will use the box

Box 19.1 Litter-training kittens (client handout #15, printable version available online)

In order to prevent litterbox problems in adult cats, it is extremely important to get your kitten off to a good start. Fortunately, most kittens are attracted to an area where they can scratch, dig, and perhaps bury their urine and stool, so that dirt, clay, or any other “litter” that allows for digging will usually be effective. However, if there are other surfaces that are attractive to your kitten such as plants with soil, you will need to prevent access to these areas. Most kittens can easily be housetrained if offered a suitable litter, in a quiet location with easy access. The box should be scooped and refilled each day or any time you see it has been used, and it should be changed at least once a week. Whenever you see your kitten using the box, be sure to provide rewards. To ensure that there are enough clean litterboxes available at any one time and to reduce the possibility of conflicts at the litterbox, provide at least one box per cat.

Begin by closely watching the kitten at all times or confine your cat to the room where the litter is located when you cannot supervise. Be sure the room has everything the kitten needs to keep it happy: places to climb, perch, rest, and scratch, and some food, water, and play toys. If you are supervising and your kitten begins purposely sniffing around, it may need to eliminate. Say “litter time,” gently pick it up, carry it to the litterbox, and place it inside. Praise any sniffing or scratching and give praise, a small treat, or a play toy for eliminating. Do this for at least the first 2 weeks and a regular pattern of using the box is likely to be established. You may also find that in time the command “litter time” might get it to go to the box to eliminate to get the reward, without the need to move the kitten physically.

Litter (substrate)

1. Choose an appropriate litter material. Studies suggest that more cats prefer clumping litter. It's also easier to keep clean, although it may lead to tracking of material outside the box. Other commercial litter materials may prove equally or more appealing. Kittens that eat litter should not be given clumping litter.
2. If the litter you have chosen is not being used by your kitten, try other types. Some kittens may prefer a different texture. Traditional clay litter, recycled newspaper litter, plastic litter pellets (pearls), wheat litter, cedar shavings, or even a little potting soil or sand added to the litter may be more appealing.
3. If your kitten won't use the litterbox, try to determine if there is anything about the litter that it doesn't like. For example, you may find that the scent, texture, a litter liner, litter additive, or insufficient cleaning is leading to avoidance.

Litterbox

1. Choose an appropriate litterbox. The box should be big enough that an adult cat can move about and scratch. Many litterboxes are too small for a cat to enter comfortably, squat, and dig. Some kittens even prefer self-cleaning litters while others are frightened by these products.
2. If the litterbox is not being used regularly, try other types. Some kittens prefer the privacy of a hooded box. A larger box may be more appealing, such as a sweater storage box or even a small child's swimming pool if you have multiple cats. Some kittens may prefer a deeper box with more litter while others may prefer lower sides so that they can be more easily accessed. Some kittens may prefer a ledge on which to perch surrounding the litterbox.

3. If your pet won't use the litterbox, try to determine if there is anything about it that is deterring your kitten. For example, you may find that a hood, sides that are too high, a litterbox that is too small, or a motorized self-cleaning litterbox may lead to avoidance.

Location

1. The box should be located in a quiet area that is easily accessible to the pet, especially when it wakes from a nap, or after eating or playing.
2. If the box is not being used by your kitten, consider sites that are easier to access including the ones that the kitten prefers to use. If you use the room for other functions (e.g., bathroom), it may be inaccessible to the kitten when it needs to be used.
3. If the litterbox is in an area that might be unpleasant or anxiety-evoking for your kitten (e.g., a dark basement, or next to a furnace, air vent, washing machine, or toilet) it may be necessary to relocate it.
4. Some kittens will avoid the area if they are chased, cornered, or bothered by another cat or dog in the area. If this is the case, then additional locations or more privacy may be needed (e.g., a cat door to the area).

Spraying

Some cats, especially males that reach puberty and have not been neutered and female cats in estrus (heat), may begin to mark their territory by backing up and spraying a stream of urine on vertical (upright) objects and surfaces. Neutering will stop the spraying behavior in most cats. If neutering is not successful you will need to seek advice to determine why your cat is continuing to spray. Treatment may involve finding and resolving the source of territorial stimulation, addressing anxiety or conflict in the home, reducing urine odor, or using a pheromone (Feliway) or medication.

What to do if your kitten does not use the litterbox

1. Determine whether your kitten is soiling with urine, stools, or both and identify the surfaces and locations that are soiled. Discuss the problem with your veterinarian since medical causes must first be considered.
2. Next, determine where and when the kitten is eliminating to try to determine why it might be avoiding its litter and what the kitten might prefer about the area where it soils. It might then be possible to move the litter or change the litter or box to suit the kitten best.
3. Remove the odor thoroughly from flooring and carpets with an enzymatic/bacterial cleaner.
4. Change the function of the area by placing food bowls, toys, or a scratching post in the area.
5. Consider blocking access to any area where the kitten is soiling or make the area unpleasant with a motion-activated alarm or spray or with an uncomfortable surface such as double-sided tape or a sheet of vinyl carpet runner with the nubs pointing up.
6. If there is more than one cat, provide more litterboxes and at least two litter stations.

intermittently, which might provide some clues as to when and why the box is used and when it is avoided. Periuria has been used to describe urinating outside the litterbox and perichezia to describe defecating outside the litterbox.¹⁶

Obtain litterbox information, such as size, type of box, number of litterboxes and locations, type of litter, frequency

and type of cleaning, litterbox management, the cat's behavior in the box, and whether there is a preferred box, location, or litter. Also evaluate the cat's elimination habits, including frequency of elimination, whether the stools and urine seem normal, time spent in the box, and the cat's posturing before, during, and after elimination to evaluate whether it circles,

Table 19.1 Comparison between marking and inappropriate toileting in cats

Marking	Inappropriate toileting
May be territorial, hormonal, or anxiety-induced	Voiding behavior
Adults – postpubertal	Any age
Most common in intact males and females in estrus followed by neutered males	Males or females, intact or neutered
Urine (in rare cases, feces)	Urine and/or feces
Usually small amounts	Usually larger amounts
Generally vertical surfaces; in rare cases urine or stools on horizontal surfaces	Horizontal surfaces
Stands, tail erect, backs up, treads with rear legs, sprays urine	Squats
Prominent upright surfaces in the home; doors, windows, new objects, owners' possessions, or frequently used furniture	May eliminate on specific surfaces or selected locations but may also have no obvious preference

Box 19.2 Medical causes of housesoiling in cats**Housesoiling (urine)**

Conditions causing polyuria (e.g., diabetes, renal)
 Conditions causing pollakiuria (e.g., feline idiopathic cystitis, calculi, bacterial cystitis)
 Conditions causing incontinence (e.g., central, neurogenic, neuropathy)
 Conditions affecting locomotion (e.g., arthritis, disc disease, muscle atrophy, neurologic)
 Miscellaneous conditions (e.g., metabolic disorders such as hepatic, hyperthyroidism, cognitive dysfunction)

Housesoiling (feces)

Conditions causing increased frequency/urge (inflammatory bowel disease, colitis, diarrhea)
 Conditions causing painful or difficult defecation (anal sacculitis, obstipation, constipation, neoplasia)
 Conditions causing incontinence (neurological)
 Conditions affecting locomotion, posturing litter access (arthritis, disc disease, muscle atrophy, neurologic)
 Miscellaneous conditions (hyperthyroidism, disorders affecting central nervous system, cognitive dysfunction)

digs, vocalizes, and completes its elimination in the box or whether the cat runs away during elimination. Also ask about the soiling itself: are there surfaces that the cat avoids and are there locations or surfaces that the cat prefers? When did the problem start, and was there any change in the health, environment, or lifestyle of the cat at the time of onset? Describe the present problem and any change or progression over time. What does the owner do when the cat

eliminates or when the owner finds a soiled area? Punishment is likely to contribute to anxiety and will not resolve the problem. Find out what treatments have been used to date and the cat's response. Has the cat had any training? What is the cat's temperament and how does it get along with family members and visitors? Are there other pets in the home and how do they get along? Finally keep a diary of the daily schedule, frequency of elimination, when and where the soiling occurs, litterbox use, and whether there are any changes or stressors that can be correlated with the elimination events. A monitoring camera in the litter area or the soiled areas may also help to determine the reasons for avoidance.

Cats that entirely avoid using the box may have a preference for other surfaces or locations, or may have an aversion to returning to the box. For cats that use their litter intermittently important clues might be obtained from the diary, monitoring cameras, and history. Litter cleanliness and situations that might induce the cat to avoid the box intermittently should be considered.

Factors that contribute to the initiation of housesoiling may differ from the factors that maintain the behavior. For example, a change in the type or location of litter may have caused the initial avoidance. However, the cat may persist if it has acquired new surface or location preferences such as carpet even if the owner switches back to an acceptable brand of litter. This might not be surprising when one considers that carpet is soft and absorbent, generally quite spacious, has easy access and retreat, retains some residual odor, and is extremely well cleaned by its owners each time urine or stool is found. In this example, the initiating factor was a litter change; the maintaining factors are the new preferences. It is important to know the maintaining factors in order to curtail the problem. Uncovering the initiating factors will help the owner prevent the problem from recurring.

While inappropriate toileting is generally about substrate, location, and access, urine marking is generally associated with situations that are anxiety-evoking.⁸ Territorial issues and hormonal factors may also play a role. Therefore the history for marking should focus on any conflict and anxiety or changes in the environment that may have arisen at the time the behavior began. Based on the cat's relationships with people and other pets and the location and timing of urine marking, it might be possible to determine the cause or inciting stimuli. For example, some cats will target new or novel objects, surfaces, or odors. Cats that mark external walls, windows, and doorways may be responding to outdoor stimuli. When there are multiple cats in the home, relationships between the cats need to be considered. Cats that mark owner possessions or those of the family dog may be anxious about these relationships. Changes in the environment can also lead to marking. In evaluating the history determine if there are specific events that precede the marking (e.g., punishment, agonistic encounters with dogs or other cats).

Urine marking

Urine spraying is a sexually dimorphic behavior, occurring with a higher frequency in male cats. During the spraying

sequence, the cat will back up to the target, stand with its rear end held high, tail erect and quivering, and squirt a stream of urine. During or just prior to the release of urine, the cat may alternately tread the ground with its rear paws. The behavior appears to be facilitated by sexual hormones because the incidence of spraying is higher in intact animals, and enhanced in the spring time by females in estrus.¹⁷ Intact male cat urine has a particularly powerful pungency, likely due in part to feline levels. Estrus also increases spraying by females.¹⁸ However, urine marking is not completely dependent on the hormones since 10% or more of males and 5% or less of females will continue to spray following neutering.^{9,19,20} In fact, in clinical trials for a urine marking study, the ratio of neutered males to spayed females may exceed 5:1.²¹ This is likely because the neural circuitry in the male is established prior to birth.²² Cats in multicat households are more likely to spray than cats in single-cat households.²¹ Male cats that live with a female cat are more likely to spray than those living with another male.²⁰

While urine spraying on upright surfaces is readily recognized as a type of marking, cats may less commonly urine mark on horizontal surfaces. This type of urine marking can be more difficult to diagnose, especially when the eliciting stimuli are not readily apparent. Marking on horizontal surfaces is a consideration when the cat deposits small amounts of urine or feces on socially significant surfaces, rather than specific substrates or locations, and continues to use its litter for elimination of both urine and stools. In horizontal marking, the cat may squat, quiver the tail, and walk away without sniffing.²³ Most cats that mark on horizontal surfaces also mark on vertical surfaces.²⁴

Urine marking serves as a communicative function among conspecifics with territorial, agonistic, and sexual connotations. Cats generally mark to leave their own scent. As such the cat does not dig after spraying nor try to cover its scent.²⁵ While cats have been observed to overmark the urine marks of other cats, there is little indication that cats are strongly motivated to cover recently posted markings of preceding animals with their own urine.²⁶ It has also been suggested that urine marking may serve to coordinate movements and territorial use, thus limiting contact between individuals in a given area that might be antagonistic, “i.e., time sharing.”¹⁹ While this may be the case, there is no indication that discovering a urine mark causes the investigating cat to avoid or retreat.²³ Flehmen is used in response to the urine of other cats, as a means of collecting social information. Male cats are more intent on investigating scent marks, especially those of estrus females. Urine from unfamiliar cats is sniffed longer than that of familiar cats.²⁷

Some cats will spray urine during socially stressful situations, such as adding new pets or family members to the home, visits by animals or humans, absences by the owner, and tension between pets or with a family member. While it has been suggested that spraying might allow the cat to be more self-assured (coping mechanism), it is also possible that urine spraying during situations of stress, anxiety, and conflict is a form of displacement behavior.

Besides marking with urine, cats also use secretions from skin glands and paws for communication. In fact, there may be an antagonistic relationship between urine marking and facial marking as application of cheek gland secretions reduces both sexual and reactive urine marking.²⁸

When taking the history of a cat that is spraying, try to identify anything that might elicit a territorial response or make the pet anxious. Spraying is influenced by factors pertaining to the individual (hormones, temperament), environmental stimuli (new roommate, new cat in the neighborhood, remodeling, moving), and relationships with family members and other pets (new baby, absences from home, conflicts, punishment).

Sometimes, the residual scent of another cat can cause the pet to spray. For example, if a visitor has cats at home, a cat may spray the visitor's coat when it smells the odor of non-resident cats. Also a cat may start spraying around the living-room fireplace if fire logs are brought inside the home that have been sprayed by neighborhood cats (Box 19.3). For prognostic factors see Box 19.4.

Treatment

Specific stimuli and environmental changes that trigger marking must first be discovered to determine the protocol required for treatment.²¹ New pets or humans in the cat's environment, major changes in the environment, changes in the owner's schedule, and virtually any stressful situation may be underlying causes. The marking of furniture containing another animal or family member's odor may be a tipoff as to the relationships that might need to be improved.

The main approaches to resolving urine marking involve reducing or avoiding the cat's exposure to triggering stimuli and altering the cat's response to the stimuli. Reducing or

Box 19.3 Factors that might influence a cat's tendency to spray

- Hormones
- Genetics/temperament
- Feline population density (new cats in neighborhood or household)
- Scents from other cats (scent on visitor's clothes)
- Changes in the environment (new baby, remodeling, new furniture, novel objects)
- New schedule for owner – less time with cat
- Owner absences from the home
- Inappropriate punishment

Box 19.4 Factors affecting the prognosis of resolving a urine marking problem

- Cause of the problem
- Duration of the problem
- Frequency of marking incidents
- Number of areas and surfaces marked
- Number of cats in the home
- Ability to identify and control access to arousing stimuli
- Environmental control – practicality and limitations
- Temperament of the pet
- Owner commitment/expectations – human–animal bond
- Health of the pet
- Drug use – efficacy, compliance, and cost
- Consultant's ability to diagnose and develop a program that suits pet, owner, and household

Table 19.2 Treatment of urine marking

Goal	Approach
Keep stimuli away from cat	Eliminate outdoor stimuli. For example, if outdoor cats are the stimulus for spraying, discourage visits by humane removal or outdoor avoidance devices (e.g., motion detector sprinkler, cat repellents)
	Move birdfeeders and rubbish bins that attract cats. Remove stray cat urine from around windows and doors with odor eliminators
	Reduce the number of cats in the home
	Keep children, dogs, and visitors away from the cat
Keep cat away from stimuli	Keep the cat away from or block access to windows or other vantage points where it can view outdoor cats
	Use window coverings, or close doors to prevent the cat from seeing stray cats
	White noise, TV, or CD may reduce the sound of outdoor stimuli
	Separate or confine from cats, dogs, children, or visitors
Surgery	Castration reduces spraying in 90% of males and spaying in 95% of females
Confinement	When the cat cannot be supervised, confine away from areas where it sprays
	Relapses may be reduced by allowing the cat back into previously soiled areas gradually, with constant supervision and ensuring positive outcomes
Supervision, punishment, and avoidance	Punishment should be avoided. If the owner views the cat as it is about to mark, call the cat away with a command and reward. If the owner catches the cat while marking, interrupt (e.g., hand clap, water sprayer). Interruptions while remaining out of sight will avoid the potential for fear of the owner
	Avoidance devices might keep pets away from areas where it marks. Place upside-down vinyl carpet runner (nubs up), double-sided tape, aversive scents such as citrus, perfumes, or cat repellent, or a motion-activated alarm or spray in the area. However, this will only stop marking at the specific site
Change function of sprayed area	If a cat only marks one or two areas, consider moving its bedding, food bowls, scratching post, or toys to the area
Access to the outdoors	Some cats will spray less indoors if they have some access to the outdoors, while others will do better if kept indoors all the time
Provide alternate sites for marking	If marking is limited to a specific area, provide box with higher sides, place box in tub or shower stall, or try covered box
Environmental management	Increasing the number of litterboxes, providing additional litter locations, increasing litterbox scooping to at least once a day, cleaning the box weekly, and using odor counteractants where the cat marks may address environmental factors that contribute to spraying. Also do preference testing to find the most appealing litter, box, and location
Environmental enrichment	Provide a relaxed and enriched environment to provide for cat's needs and environmental control with opportunities to climb, perch, and hide (see Chapter 4)
Drug therapy	- Fluoxetine and clomipramine have been shown to be effective for eliminating or reducing marking, as may be other drugs and supplements (Table 19.3). Pretreatment lab tests should precede drug use to screen for underlying medical problems - Transdermal application is unlikely to be effective for psychotropic drugs - A drug response can be expected in 1–4 weeks, although 8 weeks or longer may be required for maximal improvement. After 2 months or longer of effective control the drug can be gradually reduced. Some cats may require long-term maintenance
Pheromone therapy	Feliway spray or diffuser may reduce spraying within 1–4 weeks
	Pheromone therapy can be combined with drug therapy

preventing access to marked sites is often the best initial strategy. If social tension between resident cats is the underlying problem, then their relationship needs to be addressed. Treatment involves one or more of prevention, surgery, environmental management, pheromones, drugs, and perhaps behavior modification.¹⁶ However, behavior modification utilizing desensitization and counterconditioning is generally not practical except when a problem in a relationship might be addressed (e.g., between cats, cat and dog, or

cat and humans). Punishment is contraindicated, since anxiety is often the underlying cause of the problem ([Table 19.2](#)).

Environmental management

Eliminating the factors that contribute to marking may not always be possible, especially when the problem is stray cats on the property or relationships between cats in the home.



Figure 19.1 Outdoor deterrents. These products have been designed to keep animals off the property. Critter Gitter (audible motion detector) (left), ScareCrow motion detector sprinkler (left center), and two ultrasonic deterrents (right center, right). (For more details see [Chapter 7](#) and [Box 7.1](#), client handout #21, available online.)

Therefore the principal approach at least initially should focus on modification of the pet's environment to reduce access to the target areas or decrease exposure to the inciting stimuli.

If the stimulus for marking is the sight, sound, or odors of outdoor cats, then efforts should be made to stop these cats from coming onto the property. This may be possible by placing booby traps in strategic locations outdoors such as pet repellents, motion-activated sprays, or sprinkler. Ultrasonic motion detectors are also available but are seldom effective ([Figure 19.1](#)). Anything in the yard that might attract roaming cats should be removed or made inaccessible (bird feeders, garbage, food) and urine odor should be removed with enzymatic/bacterial cleaners or odor counteractants. If the owners cannot find a way to prevent stray cats from accessing their yard, they may need to consider having them humanely removed.

Another option is to keep the spraying cat away from stimuli that incite spraying by blocking access to windows or windowsills, moving furniture or cat perches away from the window, or keeping the cat out of rooms with an outdoor view. Window shades, drapes, blinds, or other visual barriers might be used to block the sight of outdoors cats and music or white noise might be used to reduce the sounds of outdoor stimuli. Avoidance devices such as motion-activated sprays or alarms, or other deterrents such as double-sided tape, unpleasant odors (citrus, cat repellents), or vinyl carpet runners with the nubs up, could also be used to keep the cat away from areas where it might see other cats or where it might mark. However, while making soiled areas unpleasant

may stop use of the site, the cat may respond by changing its marking sites. (Also see management and treatment of redirected aggression for preventing stimulus exposure in [Chapter 21](#).)

Cats that mark in one or two particular areas may cease if owners change the function of the area to a feeding, sleeping, catnip, scratching, or play area site. Facial bunting in the area might be encouraged with Feliway. For some cats, an acceptable compromise might be to allow one or two sites for indoor marking. This might be accomplished with a covered or high-sided litterbox, by placing litterboxes in a shower stall or bath tub, or by placing litterboxes against the wall in an upright position where the cat is marking.

If the problem arises as a result of the cat's relationship with other cats, people, or dogs within the home, the long-term goal is to use desensitization and counterconditioning to improve these relationships (see [Chapter 21](#)).

Stress management

Since reactive marking may be due to underlying anxiety, the environment and social interactions should be evaluated to ensure that stressors can be avoided and the cat's environment is calm, predictable, and sufficiently enriched²⁹ (see [Chapter 4](#)). Giving the cat an opportunity to engage in normal daily activities (e.g., scratching, climbing, resting, perching, play) and ways to avoid undesirable outcomes (e.g., climbing, perching, hiding) and avoiding anything unpleasant (e.g., punishment) can reduce the anxiety that contributes to marking. Some cats may spray less if given more access to the outdoors, while others do better if kept inside away from potential outdoor stressors and stimuli. If there are conflicts between cats in the home, the relationships between the cats will need to be improved. In some cases, reducing the number of cats in the home or rehoming a cat with poor social skills may be beneficial.

Whether some cases of spraying are due to litterbox avoidance, an increase in waste accumulation, or conflicts over use of litterboxes, scooping waste from the litterbox daily, changing the litter and cleaning the box weekly, providing more litterboxes and more litter stations, and thoroughly cleaning soiled areas with enzymatic/bacterial cleaners have been shown to reduce spraying.²¹

Surgery

Neutering reduces urine marking and urine odor in intact male cats as well as the marking associated with estrus in female cats. Of cats neutered between 6 and 10 months, about 10% of adult males and 5% of females become urine markers as adults, while castration eliminates urine marking in 90% of adult male cats.^{19,20} Therefore age and experience do not appear to play a role as castration is equally effective at preventing and eliminating marking.³⁰ Persistence of marking is not due to residual amounts of testosterone because blood levels are reduced to those of castrates within 8–16 hours.²⁵ Should marking arise in adult male cats, the presence of male urine odor, secondary sexual characteristics, and penile barbs might indicate a retained testicle or residual extratesticular tissue which might be confirmed by gonadotropin-releasing hormone response testing (see [Chapters 6](#) and [15](#)).

Drugs and natural supplements

Medication is often necessary to control urine marking.^{9,16,31} However, none of the currently used medications is approved for use in cats, except for clomipramine in Australia. Therefore, whenever drugs are dispensed, owners should be informed of extra-label use. Pretreatment lab tests are important as a screening baseline as well as to identify cats that may have health problems such as hepatic or renal disease, that might be a contraindication for the use of drug therapy, or that might contribute to the behavior problem itself. Since individual responses may vary, owners should start medications when they are available to observe their cat's response. While improvement may be seen within the first week, 8 weeks or longer might be needed to achieve maximal improvement.^{32,33} Once there has been a cessation in spraying for at least 2 months an attempt might then be made to decrease the dosage slowly. However, long-term therapy is often necessary and recurrence rates on drug withdrawal are likely to be high unless sufficient modifications can be made to the pet's behavior or environment. After 8 weeks of therapy, recurrence rates ranging from 53% to over 75% were reported after discontinuation of buspirone and diazepam respectively.³⁴ In another study in which improvement with drug therapy was achieved after either 16 or 32 weeks of fluoxetine, most cats returned to marking after withdrawal of treatment; however, a second course of treatment was found to be as effective as the first.³² Therefore gradual dose reduction over several months might be a more practical approach to determine if the drug can be successfully withdrawn, to reduce the potential for adverse or rebound effects during withdrawal, and to determine whether a lower maintenance dose might be effective. Some cats maintained on long-term therapy may ultimately show recurrence, perhaps associated with new or stronger environmental stressors or perhaps related to long-term tolerance. For all pets on medication 6–12-month rechecks and lab work are recommended.

Owners should be informed to monitor and report any side-effects, including physical effects such as gastrointestinal signs, anorexia, or urine or stool retention and any undesirable or paradoxical behavioral effects (see [Chapter 7](#)). Similarly, owners should be advised as to how long it might take to achieve efficacy and at what point dose adjustments or a change in treatment regime may need to be implemented.

In a recent meta-analysis of 10 studies in nine publications that evaluated pharmacotherapy or pheromone therapy for urine marking in cats, there was a significant ($P < 0.001$) association between the use of any intervention and the number of cats that ceased or reduced urine spraying by at least 90%. Analysis by intervention type indicated that fluoxetine, clomipramine, and pheromones may each assist in managing urine spraying beyond a placebo-based intervention. Although based on few studies, the greatest effect was achieved with fluoxetine in combination with environmental management and cleaning. Clomipramine was also effective but dose and effects were somewhat more variable. Pheromones also resulted in significant reduction in marking but lower probability of cessation.³⁵

With respect to specific studies, fluoxetine was effective at a dose of 1 mg/kg in a double-blind placebo-controlled

study, with a significant improvement by week 2 and continued decrease to week 8. Cats with the greatest marking at baseline were most likely to recur after drug withdrawal.³⁶ Other selective serotonin reuptake inhibitors such as paroxetine and sertraline have also anecdotally been reported to be effective. Clomipramine is also effective for reducing or controlling urine marking in cats at a dose of 0.25–0.5 mg/kg per day.^{32,37,38} In one study, 25% of cats could be withdrawn without recurrence after 6 months.³⁷ In one comparative study the efficacy of clomipramine at 0.5 mg/kg per day and fluoxetine at 1 mg/kg per day was similar, with treatment of longer than 8 weeks leading to increased efficacy.³² Amitriptyline is another tricyclic antidepressant with reported efficacy but appears to be bitter and therefore more difficult to administer and no studies have been published to date.

In another study, buspirone reduced spraying in 55% of cats, with cessation in 33%. After drug withdrawal buspirone had a lower relapse rate of 50% compared to diazepam (up to 90%).³⁴ Buspirone does not cause the sedation, ataxia, or increased appetite seen with most benzodiazepines. It has not been associated with adverse hepatic events and may therefore be a good option in geriatric cats. Dosing is twice daily. Improvement may not be seen for 1–2 weeks. Diazepam has been reported to be effective at reducing spraying in 55–74% of cats, with greatest effect achieved in neutered males.^{34,39} Other benzodiazepines such as alprazolam, lorazepam, clonazepam, and oxazepam might also be effective. Benzodiazepines might cause ataxia, sedation, and increased appetite (which may be desirable when using food for counterconditioning). Some cats may develop a paradoxical hyperactivity which may resolve over a few days, or may require dose adjustment. In addition, rare reports of fatal hepatopathies have been reported with diazepam use.⁴⁰ Since oxazepam, clonazepam, and lorazepam have no active intermediate metabolites, this may reduce the potential for adverse hepatic effects. Twice-daily treatment is generally required for most benzodiazepines and gradual withdrawal is recommended to avoid rebound effects.

Cyproheptadine may be useful in the control of urine marking.⁴¹ However, in one comparative study clomipramine was found to be more effective.⁴² Selegiline has been used for elimination disorders related to cognitive decline, and in some European literature has been reported to be effective for emotional disorders in cats, including urine marking.⁴³ Progestins appear to be less effective than most other medications, except perhaps in neutered males where improvement reached 50% compared to 10% in spayed females.^{44,45} However, due to their potential for side-effects such as immunosuppression, mammary cancer, and diabetes mellitus, their use should only be considered when other therapeutics are ineffective.

Owner compliance – route of administration

Drugs such as clomipramine and fluoxetine come in a size and chewable format for dogs that might make dosing and administration practical for some cats. However, attempts to use some of these drugs as transdermal medication, including fluoxetine, amitriptyline, and buspirone, have found little to no absorption compared to oral dosing.^{46,47} Therefore, compounding of drugs into a size and formulation for

Table 19.3 Drug therapy for urine marking in cats

Drug	Dosage (see Appendix D)	Comments
Fluoxetine	0.5–1 mg/kg q 24 hours	Good data for efficacy
Paroxetine	0.25–1 mg/kg q 24 hours	Likely similar effect but no data. May be more calming. Mild anticholinergic
Clomipramine	0.3–0.5 mg/kg q 24 hours	Mild anticholinergic. Good data for efficacy
Amitriptyline	0.5–1 mg/kg q 12–24 hours	Anticholinergic; highly bitter – no data
Buspirone	0.5–1 mg/kg bid	Expensive; minimal side-effects; twice-daily dosing – moderate efficacy
Diazepam	0.25–0.5 mg/kg q 12 hours	Rare hepatotoxicity – moderate efficacy – may cause ataxia, sedation, appetite increase
Oxazepam	0.2–0.5 mg/kg q 12–24 hours	No data; may be less potential for hepatotoxicity than diazepam
Cyproheptadine	2.0–4.0 mg/cat q 12 hours	May be useful for male cats
Selegiline	0.5–1 mg/kg q 24 hours	Cognitive dysfunction or emotional disorders
Megestrol acetate	2.5–10 mg per cat q 24 hours for 1–2 weeks then reduce gradually to once to twice weekly	Poor efficacy except perhaps neutered males – potential for adverse effects – final option
Medroxyprogesterone acetate	5–20 mg/kg sc/im q 3–4 months	Injectable – potential for adverse effects – a possible final option for neutered males

cats may be necessary. However, relative potency and stability may be an issue with compounded products. Another useful option would be to hide the pill in a high-valued food or pill pocket that might mask the pill's flavor, or to crush the medication into a flavored paste (liver or fish spreads) or butter and divide the mixture into the correct dose with the excess discarded or wrapped in wax paper or aluminum foil for dosing over consecutive days (Table 19.3).

Pheromones

The feline facial pheromone spray Feliway has been reported to reduce urine spraying in 74–97% of cats.^{48–50} A Feliway diffuser has also been shown to reduce urine marking.⁵¹ Since these studies were generally 4 weeks or less and did not include any environmental management, greater improvement might be achieved with longer-term use and a concurrent behavioral management program.³⁵ When marking is due to a recent change in the household (i.e., new cat, renovations, moving) or related to social tension between resident cats, Feliway may be a good initial option. However, pheromones may be less effective in multicat households or with marked intercat aggression.^{48,49} If sufficient improvement is not achieved with Feliway alone, concurrent drug therapy should be considered (see Chapters 8 and 9).

A variety of other natural products such as L-theanine and alpha-casozepine might reduce anxiety-induced urine marking but data are still lacking (see Chapter 9).

Feline inappropriate toileting

Overview

Inappropriate toileting involves squatting to defecate or urinate on horizontal surfaces outside the litterbox that are unacceptable to the owner. Inappropriate toileting occurs

with an almost equal incidence in females and males. A variety of locations might be soiled, or the pet may develop specific location and surface preferences. In one study of inappropriate toileting, it was found that a history of previous infection, the use of scented litter, and cats that did not cover their elimination were the only statistically significant risk factors for inappropriate toileting and that there was no association with increased anxiety.¹³

There are many causes of inappropriate toileting. If the cat suddenly starts urinating and defecating outside the box, it is highly likely that something about the litterbox is unacceptable to the cat. The physical accumulation of waste or odors, unacceptable litter, or a negative experience associated with the litterbox (including pain or discomfort during elimination) may cause avoidance. The box may be in an area the cat does not like. There may be too much traffic through the area, or the location may be associated with something aversive that happened to the cat. Perhaps it was medicated, disciplined, frightened, or chased by another pet in the vicinity of the box. If the pet has been punished by family members, it may start eliminating in secluded areas in order to avoid family members. Some cats will eliminate outside the litterbox because of a preference for that surface or location. If the cat consistently defecates in the box, but urinates elsewhere, or vice versa, then the problem is unlikely to be due to litterbox, substrate, or box avoidance. Likely causes include medical problems leading to urine soiling (e.g., pain associated with FIC or increased frequency or volume of urination), medical problems leading to fecal soiling (e.g., pain, discomfort, or decreased control associated with constipation, inflammatory bowel disease), or surface or location preferences for urine or stool. Some cats will not use the same box for urine and stool. Additional reasons for stool avoidance might be related to the time and space required for posturing, digging, and defecation which might be more affected than urination by pain, discomfort,

Table 19.4 Possible causes of inappropriate toileting

Litterbox aversion	• Aversive odor (deodorant, organic waste) • Box not cleaned frequently enough • Discomfort during elimination • Unacceptable litter (depth, texture, odor)
	• Unacceptable box (too small, covered, plastic liner) • Disciplined, medicated, or frightened in the box by humans, other pets
Location aversion	• Too much activity in the area • Traumatic/fearful experience in the area
Location preference	• Another area is more appealing to the cat
Surface preference	• Another surface is more appealing than the litter substrate
Anxiety	• Owner absence, high cat density, moving, household changes, new furniture, remodeling, punishment
Need for privacy	• Nervous or fearful pet
Geriatric/medical	• Cognitive dysfunction, weakness, arthritis, polyuria/polydipsia, constipation

or mobility issues; in addition pets might be more likely to be confronted or have their access blocked by a pet or person during defecation.

For some cats, eliminating on horizontal surfaces can be marking behavior. If the cat is urinating on top of specific items, such as the owner's clothing, bed, favorite chair, or children's toys, an anxiety-evoked problem is possible. On the other hand, for some cats these surfaces may offer an appealing odor or texture for toileting. If emotional factors are influencing housesoiling, the owner may report other changes, including hiding, avoidance, aggression, or any alteration in the pet's general temperament. Keeping a diary may help the owner identify the stimuli that trigger intermittent behaviors, whether soiling or marking (Table 19.4). Video recording or observing the cat posturing (i.e., tail quivering, squatting, and soiling) may be the most accurate way to confirm a diagnosis of horizontal marking.

Treatment

Treatment involves: (1) identifying and treating the cause; (2) re-establishing the habit of litter, box, and location use; and (3) preventing the cat from returning to previously soiled areas (Table 19.5).

Identifying and treating the cause

The owners must identify and resolve causes of avoidance as well as provide a litter, box, and location that are preferable to the soiled surfaces and sites. Medical problems need to be treated. Anything that might be aversive about the box (liner, lid), litter (texture, scent, cleanliness), and location needs to be identified.

At first the owners might make simple changes to improve litter appeal by cleaning more frequently, changing the box location, or changing the type of box or litter. The practitioner can begin by suggesting changes that appear to be most appropriate based on the history of what the cat is presently using and what is being avoided. However, the best option would be to determine the cat's preference by giving two boxes with one variable changed every few days (e.g., litter type, litterbox) to determine what is the cat's preferred litter and box. If the owner has sufficient space, three or four choices might be offered "cafeteria" style to give the cat more options. In addition, boxes might be placed in different locations to determine if there is a location preference. If the owner has multiple cats, separating the cats might be the most practical way to evaluate litter preferences effectively. Another option might be to place a monitor in the litter area to see which cat uses which litter.

A healthy cat may urinate 2–4 times daily and defecate at least once daily.⁵² Therefore, litter cleanliness and odor control should be a primary consideration. If elimination frequency and volume are increased by disease, more frequent cleaning, more boxes, clumping litters, self-cleaning boxes, or a larger box may be required. In a number of studies an activated carbon litter (Fresh Step, Clorox) was preferred over similar clumping litters and those enhanced with baking soda.^{53–55} In another study, the frequency of elimination outside the box was reduced when Zero Odor was added to the litter.⁵⁶

To assess for litter preference, the practitioner should first determine what substrate is most appealing to the cat, and what is being avoided. Different litter types can then be offered to determine which ones the cat prefers. Important factors include texture, granularity, and coarseness. Studies have demonstrated that cats prefer clumping litter over clay, recycled paper, and a light-weight flushable litter with a pH indicator.^{57–59} Some cats might be attracted to a mixture of potting soil or sand. Litter additives have been developed to increase litter appeal but no controlled data have been published as to their efficacy. Scented litters were found to be a risk factor for inappropriate toileting in one study,¹³ while other studies have found no association.^{52,60} Therefore, it might be prudent to offer both scented and unscented litters in a preference test. Although commercial litter might be most practical, the owner might even be advised to consider a towel or carpet remnant in one of the boxes if the cat appears to prefer soft-textured surfaces, or an empty box or one-half covered with litter if the cat appears to prefer hard flooring. For stools but not urine, greater litter depth may be preferred.⁶¹ Cats that soil over the edge of a box should be provided with a covered box or one with higher sides.

A general rule of thumb is that the more boxes and bigger boxes, the better.⁶² Owners should aim for at least one box per cat. Boxes should be at least 1.5 times the length of the cat, scooped once or twice daily, and cleaned and changed weekly with hot water, while avoiding strong disinfectants. However in one preference test control, bleach and fish scents were more appealing to cats than citrus; therefore bleach might be a better choice than citrus scents for litterbox cleaning and disinfecting.⁶³ Try boxes with low and high sides, covered and uncovered, with and without liners. Some cats appear to need privacy. For these cats, the owner might place an open-ended cardboard box over the litterbox or

Table 19.5 Treatment of feline inappropriate toileting

Goal	Approach
Reward desired behavior	Give food treats or play immediately following elimination in the box to reward litter use. Rewards can also be used to train the cat to go to its litter area. Clicker training can be particularly useful in timing of rewards for elimination
Remove the cause	- Medical causes must be ruled out - If the problem is location aversion, the box could be moved to the cat's preferred area and then gradually moved to a preferable site - Identify deterrents in the litter area (e.g., laundry equipment, temperature, lighting, flooring, furnace). Also determine if cat is being disturbed in the area by family members, other cats, or dogs - If the problem is due to litter or box aversion then determine if the cause might be cleanliness, box size, litter liners, scent, covered box, or litter type through preference testing
Prevent access to soiled sites	- Move furniture over the soiled areas - Block access or close doors to frequently soiled rooms
Re-establish normal litter use	- By providing the preferred box, litter, and location and removing deterrents, soiling might be resolved - If soiling persists, confine the cat to a small area with litterbox where it does not soil and only allow it out when it can be supervised 100% of the time or at times, or into locations where it is known that the cat will not soil. Confinement should continue for long enough to re-establish a reliable habit. The cat can then be allowed out of confinement for gradually longer times each time the box has been successfully used as long as there is no recurrence of soiling
Decrease desirability of inappropriate sites	- Reduce the appeal of previously soiled areas by removing carpet, placing a sheet of plastic, aluminum foil, vinyl carpet runner (nubs up), or double-sided tape in the area, or with aversive odors such as citrus or perfume - Place food bowls, bedding, toys, scratching post, kitty condo, or a play center in the area - Use booby traps or avoidance devices such as motion detector alarms or sprays - Use chemical or enzymatic/bacterial odor eliminators. Be certain to use a sufficient amount of the product to saturate the entire area - Punishment should be avoided. However if the cat begins to soil the owner should interrupt with a device (squirt of water, bean bag on floor near cat) so that the cat might cease soiling without causing fear of the owner
Increase desirability of the litterbox	- Determine favorite litter by providing additional boxes with a choice of substrates (e.g., clay, clumping, soil, carbon-activated, recycled paper, wheat, corn cob, carpet remnant, towel, empty box) - Determine favorite box by providing a choice of boxes (covered, lower sides, larger) - Determine favorite location by locating boxes in a number of locations including near to where the cat soils if practical - Scoop and refill litter at least once daily and clean boxes weekly - Increase number of boxes
Stress control - environmental enrichment	- Stress can contribute to both behavioral problems including anxiety and marking and medical problems (e.g., interstitial cystitis). Provide a calm, stable environment with sufficient enrichment, opportunities to engage in normal feline behaviors (e.g., climb, perch, bedding, scratching, food, water, play, and exploration) and opportunities to avoid stressors/environmental control (perching, climbing, hiding) - Make changes slowly and avoid punishment and any anxiety-evoking interactions
Behavioral/drugs modification	If horizontal elimination is due to marking, treat with behavioral and environmental management, stress control, and drug and pheromone therapy

purchase a covered box. Another solution is to put a baby gate in the doorway or a cat door to limit entry to the litter area. This will also protect the pet from being bothered by children or the pet dog.

Prevent resoiling

By providing a cat with its preferred box, location, and litter, removing potential aversives and cleaning regularly,

regular litter use may be re-established. However, some cats may continue also to use sites where they have previously soiled. Access to soiled areas might be prevented by moving furniture or closing doors. Removing urine and stool odor at the site might reduce reuse of the site. Use products that chemically neutralize and break down odor rather than mask it. An ample amount should be used to ensure penetration into deeper layers rather than just spraying the surface.

In some cases where soiling is limited to a few sites, the function of the area might be changed by placing a food bowl, scratching post, “kitty condo,” bedding, or toys in the area. Another option for preventing return to soiled areas is to make the site less appealing by placing aversive odors in the area, such as cologne or citrus-scented cotton balls, or by using a motion-activated alarm or spray device, double-sided carpet tape, or vinyl carpet runners with the nubs facing up. Cats that soil in a sink or bathtub might be deterred by leaving a small amount of water in the bottom. Another alternative is to place a litterbox in the area where the cat is soiling.

Punishment is stressful for the cat, may undermine the cat’s relationship with the owner, and can actually make the problem worse. Therefore all forms of owner punishment should be avoided. Instead the owners should work to teach the cat with reward training to go to its litter area and give high-value treats or a play toy for litter use. Since timing is critical, clicker training might be a better way to ensure that the reward immediately follows elimination in the box. Once trained to go to the litter on cue, the owner might then be able to monitor the cat and encourage it to return to its litter every couple of hours, or to call the cat to its litter if it begins to show any signs that it is about to eliminate. On the other hand, if the cat begins to soil while under owner supervision, some form of remote device (water spray, bean bag thrown on the floor, noise device) might be used to interrupt and deter the behavior while avoiding any association with or fear of the owner.

Re-establish litterbox use

To re-establish consistent use of the litterbox, the cat may need to be confined when it cannot be effectively supervised. When confined to a relatively small area, most cats will eliminate in the box if it is sufficiently appealing. Ideally the room should be big enough to do preference testing with at least two litters or boxes. Every attempt should be made to reduce anxiety associated with confinement by rewarding the cat each time it enters the room, and by providing perching, climbing, scratching, water, food, and play opportunities in the room. The family should be advised to remove the pet from the confinement area as much as possible for socialization and play, but never allow it out of sight. Keeping a journal of the cat’s elimination, eating, and sleeping schedule can allow owners an opportunity to begin releasing the cat at times when elimination is not “due.” This is particularly useful for stool soiling; for example, if a cat has a bowel movement once daily, it can be released from confinement each day after the litter is used.

If the cat refuses to use the litterbox when confined to the small room, the confinement area might need to be changed to a large cage. A perch or shelf should be added inside the cage to provide a place for the cat to rest. The floor should be covered with litter to ensure it is used for elimination. When the litter is used regularly it should then be placed in a litterbox on the floor of the crate, and the cat allowed access into the rest of the room as long as it continues to use the box regularly.

After several weeks without soiling, the owners can begin to release the cat with decreased supervision and for gradually longer periods of time. Before each release the owners

should ensure that the litter has been used and is thoroughly cleaned. The cat should be returned to its litter area when it might be time to eliminate if it does not voluntarily return on its own. If the cat uses the litter it should be immediately rewarded; if the cat does not eliminate, the owners should continue to supervise and return the cat to its litterbox every 30–60 minutes. If unable to supervise the owner should confine the cat to its room and release it only after the litter is used again.

Prognosis

Success depends on a number of factors, including whether the cat was previously trained to use the litterbox; whether initiating factors can be resolved; duration of the problem; the environment; number of areas and surfaces soiled; the temperament of the pet; and the patience, ability, and willingness of the family to commit to working with the pet (Box 19.5).

Summary

Steps in correcting feline housesoiling

- Identify the soiling cat.
- Rule out medical problems.
- Is the cat toileting or marking?
- Avoid inciting stimuli, keep pet from soiled area, use booby trap or remote punishment, change function of area.
- Identify causes of aversion and determine preferences for litter, box, and location.
- Re-establish litter use by confinement, supervision, and rewards.
- Maintain a calm, enriched environment, and avoid stressors (no punishment).
- Administer drugs or pheromones for anxiety and marking.

For a feline housesoiling therapy worksheet, see [Appendix C](#), form C.18, client form #8, printable version available online.

Box 19.5 Factors affecting the prognosis of resolving inappropriate toileting

- Cause of the problem
- Litterbox experience
- Substrate experience
- Duration of the problem
- Frequency of housesoiling incidents
- Number of areas and surfaces soiled
- Number of cats in the home
- Temperament of the pet
- Owner commitment to modifying behavior
- Environment/limitations
- Health of the pet
- Consultant ability to diagnose and develop a program that suits pet, owner, and household

CASE EXAMPLES

Case 1

History

Jasmine, a 3-month-old female kitten that had been obtained at 2 months of age, was using the owner's *Ficus benjamina* plant for elimination. The kitten slept in the third-floor bedroom at night and the litterbox was located on the first floor in the laundry room. The kitten had used its litterbox for the first few weeks but would no longer use it. The owner had tried a number of litter types and litterboxes, with no improvement.

Diagnosis

Physical examination revealed a healthy and very alert kitten. Urinalysis and fecal evaluation failed to show any organic cause for the elimination problem. The kitten had apparently developed a preference for using the soil in the benjamina plant and had perhaps developed an aversion for the litterbox area. Since the kitten exhibited fear of loud noises, it was suspected that the sounds of the washer and dryer could have caused it to avoid the laundry room.

Treatment

The owner was advised to prevent the kitten from eliminating in the plant by covering the surface of the soil with chips of marble. The pet was confined to a small bedroom with its litterbox when it could not be closely supervised for 2 weeks to re-establish desirable litter habits. The litterbox was then relocated to a quiet room away from the laundry facilities. Any use of the litter that was seen by the owners was rewarded with a small treat. The kitten used the litter consistently and there were no further problems.

Case 2

History

Mephistopheles, a 3-year-old neutered male cat, was presented to a veterinary behavior clinic for urine marking of 2 months' duration. Household diagrams were submitted with the history and it was determined that all urine sites were found in front of doors and windows on the first floor. The problem had begun in the early spring, and the owner was aware of the sight and smell of new cats on the property outdoors. The owners had viewed the cat soil on one occasion while squatting with tail quivering.

Diagnosis

Although the cat was urinating on both vertical and horizontal surfaces, urine marking due to outdoor stimuli was diagnosed as the cause of the problem based on the sites of soiling and the posturing of the cat. The medical evaluation was unremarkable.

Treatment

The owners confined Mephistopheles to their bedroom where he slept at night and had never previously eliminated. The litterbox was relocated to the adjacent washroom and double-sided tape was placed on the windowsills to keep him from perching and watching the outdoor cats. While confined to the bedroom he used the litterbox for all elimination. All soiled locations were treated with a commercial odor eliminator. When the owner was at home, Mephistopheles was allowed out of the bedroom under constant

supervision and did not attempt to eliminate in the previous spots. After 2 weeks, the owner began to reduce supervision but a new spot was found in front of a sliding glass door. The owner then placed vertical blinds on the glass door to block the view of the outdoor cats. This successfully stopped elimination at the location but Mephistopheles continued to mark at the rear door. Cat repellents were placed on the back porch and the marked sites were treated with an odor eliminator. A vinyl carpet runner with nubs up was placed in front of the rear door. After 2 more months of confinement and supervision, Mephistopheles was allowed to roam the house, with no recurrence of marking. However, the next spring, 9 months later, soiling recurred at the rear door. The owners reinstituted the confinement and supervision program, cleaned the areas on the back porch, added fresh cat repellent, and purchased Feliway, which they sprayed twice daily on the soiled sites at the back door. After 4 weeks, the owners could allow Mephistopheles to wander through the home any time they were at home with no further marking.

Case 3

History

Digger, a 2.5-year-old male neutered Burmese, was presented with stool soiling which initially was found next to the litterbox in the laundry room, but had progressed to a Persian rug in the dining room. The initial soiling was associated with signs of colitis with mucoid stools and an increase in frequency to 2–3 times daily. After extensive workup, food intolerance was diagnosed and the cat had been controlled for several months with venison and green pea prescription diet. Although clinical signs of colitis were resolved, Digger continued to eliminate once daily, always on the Persian rug. All urine was in the litterbox.

Diagnosis

At a behavior consultation, Digger was diagnosed with inappropriate defecation initiated by colitis. However the soiling persisted in the dining room due to litterbox aversion and surface or location preferences.

Treatment

The owners were unable to block off the dining room effectively and Digger continued to eliminate on the spot, even when plastic sheeting was placed over the Persian rug. Despite offering a second litterbox near the dining room, different litter choices, and deeper litter, the soiling continued. The owners were advised to teach Digger to enter the laundry room for food rewards and to confine him to the room at night with litter, toys, water, and bedding. Since Digger already enjoyed sleeping on towels on top of the dryer, he adapted quickly to confinement. A new larger box with clumping unscented litter was provided and after 2 nights of defecating in front of the litterbox, Digger began to use the box consistently each night. Because he would only defecate once a day, he was allowed to roam the house throughout the day and was returned to the laundry room each night. After 3 weeks the owner began to leave the laundry room door open at night but continued to protect the Persian rug with plastic sheeting. After 4 more weeks the plastic was removed, the rug was professionally cleaned, and Digger's soiling did not recur.

References

1. Heidenburger E. Housing conditions and behavioural problems of indoor cats as assessed by their owners. *Appl Anim Behav Sci* 1997;52:345–64.
2. Salman MD, Hutchison J, Ruch-Gallie R, et al. Behavioral reasons for relinquishment of dogs and cats to 12 shelters. *J Appl Anim Welfare* 2000;2:93–106.
3. Denenberg S, Landsberg GM, Horwitz D, et al. A comparison of cases referred to

- behaviourists in three different countries. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. pp. 56–62.
4. Amat M, de la Torre JLR, Fatjo J, et al. Potential risk factors associated with feline behavior problems. *Appl Anim Behav Sci* 2009;121:134–9.
 5. Bamberger M, Houpt KA. Signalment factors, comorbidity, and trends in behaviour diagnosis in cats: 736 cases 1991–2001. *J Am Vet Med Assoc* 2006;229:1602–6.
 6. Beaver BV. Housesoiling by cats: a retrospective study of 120 cases. *J Am Vet Med Assoc* 1989;25:641–37.
 7. Bergman L, Hart BL, Bain M, et al. Evaluation of urine marking by cats as a model for understanding veterinary diagnostic and treatment approaches and client attitudes. *J Am Vet Med Assoc* 2002;221:1282–6.
 8. Casey R, Murray J. Risk factors for inappropriate urination and urine spraying in domestic cats. *Proceedings of the 2010 European Veterinary Behaviour Meeting*. Belgium, Hamburg, Germany, ESVCE. 2010. 82–4.
 9. Hart BL. Behavioral and pharmacologic approaches to problem urination in cats. *Vet Clin North Am Sm Anim Pract* 1996;26:651–8.
 10. Hart BL, Leedy M. Identification of source of urine stains in multi-cat households. *J Am Vet Med Assoc* 1982;180:77.
 11. Neilson J. The use of fluorescein in cats to identify participants in housesoiling. *Proceedings of the ACVB Scientific Presentations*, Philadelphia. 2004.
 12. Walker D. Feline lower urinary tract disease: a clinical refresher. *Irish Veterinary Journal* 2009;62(4):272–7.
 13. Horwitz D. Behavioral and environmental factors associated with elimination behaviour problems in cats: a retrospective study. *Appl Anim Behav Sci* 1997;52:129–37.
 14. Tynes VV, Hart BL, Pryor PA, et al. Evaluation of the role of lower urinary tract disease in cats with urine marking behaviour. *J Am Vet Med Assoc* 2003;223:457–61.
 15. Doxsee A, Yager JA, Best SJ, et al. Extratesticular interstitial and Sertoli cell tumors in previously neutered dogs and cats; a report of 17 cases. *Can Vet J* 2006;47:763–6.
 16. Neilson J. Housesoiling in cats. In: Horwitz DF, Mills DS, editors. *BSAVA manual of canine and feline behavioural medicine*. Gloucester, UK: British Small Animal Veterinary Association; 2009. pp. 117–26.
 17. Bradshaw J, Cameron-Beaumont C. The signaling repertoire of the domestic cat and its unrelated relatives. In: Turner DC, Bateson P, editors. *The domestic cat: the biology of its behavior*. 2nd ed. Cambridge; Cambridge University Press; 2000. pp. 67–93.
 18. Beaver BV. *Feline behavior; a guide for veterinarians*. 2nd ed. St. Louis: Saunders; 2003.
 19. Hart BL, Barrett RE. Effects of castration on fighting, roaming, and urine spraying in adult male cats. *Journal of the American Veterinary Medical Association* 1973;163:290–2.
 20. Hart BL, Cooper L. Factors related to urine spraying and fighting in prepubertally gonadectomized cats. *J Am Vet Med Assoc* 1984;184:1255–8.
 21. Pryor PA, Hart BL, Bain MJ, et al. Causes of urine marking in cats and effects of environmental management on frequency of marking. *J Am Vet Med Assoc* 2001;219:1709–13.
 22. Hart BL. Gonadal androgen and social sexual behavior in male mammals. A comparative analysis. *Psychol Bull* 1974;81:383–400.
 23. Bateson P, Turner DC. Questions about cats. In: Turner DC, Bateson P, editors. *The domestic cat: the biology of its behavior*. 2nd ed. Cambridge: Cambridge University Press; 2000. pp. 231–2.
 24. Hart BL, Hart LA, Bain MJ. Feline house soiling. In: *Canine and feline behavior therapy*. 2nd ed. Ames, Iowa: Blackwell; 2006. pp. 265–86.
 25. Overall K, Rodan I, Beaver BV. Feline behavior guidelines from the American Association of Feline Practitioners. *J Am Vet Med Assoc* 2005;222:70–84.
 26. Verberne G, de Boer J. Chemocommunication among domestic cats, mediated by the olfactory and vomeronasal senses. I. Communication. *Z Tierpsycholog* 1976;42:86–109.
 27. Passanisi WC, Macdonald DW. Group discrimination on the basis of urine in a farm cat colony. In: MacDonald DW, editor. *Chemical signals in vertebrates*. Oxford: Oxford University Press; 1990.
 28. Mills D. Pheromonotherapy: theory and applications. In *Practice* 2005;27:248–55.
 29. Wright JC. Do cats with elimination problems need privacy and escape potential? *Anim Behav Consult Newslett* 1988;5:2–3.
 30. Hart BL, Eckstein RA. The role of gonadal hormones in the occurrence of objectionable behaviours in dogs and cats. *Appl Anim Behav Sci* 1997;52:331–4.
 31. Eckstein RA, Hart BL. Pharmacologic approaches to urine-marking in cats. In: Dodman NH, Shuster L, editors. *Psychopharmacology of animal behavior disorders*. Abingdon: Blackwell Science; 1998. pp. 264–76.
 32. Hart BL, Cliff KD, Tynes VV, et al. Control of urine marking by use of long-term treatment with fluoxetine or clomipramine in cats. *J Am Vet Med Assoc* 2005;226:378–82.
 33. Horwitz D. Urine marking in cats. *NAVC Clinician's Brief* 2008;6:7–8.
 34. Hart BL, Eckstein RA, Powell KL, et al. Effectiveness of buspirone on urine spraying and inappropriate urination in cats. *J Am Vet Med Assoc* 1993;203:254–8.
 35. Mills DS, Redgate SE, Landsberg GM. A meta-analysis of studies of treatments for feline urine spraying. *PloS ONE* 2011;6:e18448.
 36. Pryor PA, Hart BL, Cliff KD, et al. Effects of a selective serotonin reuptake inhibitor on urine spraying behaviour in cats. *J Am Vet Med Assoc* 2001;219:1557–61.
 37. Landsberg G, Wilson AL. Effects of clomipramine on cats presented for urine marking. *J Am Anim Hosp Assoc* 2005;41:3–11.
 38. King JN, Steffan J, Heath SE, et al. Determination of the dosage of clomipramine for the treatment of urine spraying in cats. *J Am Vet Med Assoc* 2004;225:881–7.
 39. Marder A. Psychotropic drugs and behavioural therapy. *Vet Clin North Am Small Anim Prac* 1991;21:329–42.
 40. Center SA, Elston TH, Rowland PH, et al. Fulminant hepatic failure associated with oral administration of diazepam in 11 cats. *J Am Vet Med Assoc* 1996;209:618–25.
 41. Schwartz S. Use of cyproheptadine to control urine spraying in a castrated male domestic cat. *J Am Vet Med Assoc* 1999;215:501–2.
 42. Kroll T, Houpt KA. A comparison of cyproheptadine and clomipramine for the treatment of urine spraying in cats. In: Overall KL, Mills DS, Heath SE, et al, editors. *Proceedings of the 3rd international congress on veterinary behavioral medicine*. Herts, UK: Universities Federation for Animal Welfare; 1995. pp. 184–5.
 43. Dehasse J. Retrospective study on the use of Selgian in cats. In: Askew HR, editor. *Treatment of behavior problems in dogs and cats*. Cambridge, MA: Blackwell Science; 1996.
 44. Cooper LL, Hart BL. Comparison of diazepam with progestin for effectiveness in suppression of urine spraying behavior in cats. *J Am Vet Med Assoc* 1992;200:797–801.
 45. Hart BL. Objectionable urine spraying and urine marking in cats: evaluation of progestin treatment in gonadectonized males and females. *J Am Vet Med Assoc* 1980;177:529–33.
 46. Mealey KL, Peck KE, et al. Systemic absorption of amitriptyline and buspirone after oral and transdermal administration to healthy cats. *J Vet Int Med* 2004;18:43–6.
 47. Ciribassi J, Luescher A, Paloske K, et al. Comparative bioavailability of fluoxetine after transdermal and oral administration to healthy cats. *Am J Vet Res* 2003;6:994–8.
 48. Frank DF, Erb HN, Houpt KA. Urine spraying in cats: presence of concurrent

- disease and effects of a pheromone treatment. *J Appl Anim Behav Sci* 1999;61:263–72.
49. Ogata N, Takeuchi Y. Clinical trial of a feline pheromone analogue for feline urine marking. *J Vet Med Sci* 2001;63:157–61.
 50. Hunthausen W. Evaluating a feline facial pheromone analogue to control urine spraying. *Vet Med* 2000;95:151–6.
 51. Mills DS, Mills CB. Evaluation of a novel method for delivering a synthetic analogue of feline facial pheromone to control urine spraying by cats. *Vet Rec* 2001;149:197–9.
 52. Sung W, Crowell-Davis SL. Elimination behavior patterns of domestic cats (*Felis catus*) with and without elimination behavior problems. *Am J Vet Res* 2006;67:1500–4.
 53. Neilson JC. Litter preference test; evaluating carbon enhanced litter. In: Proceedings of the ACVB/AVSAB annual meeting. Washington, DC. 2007. 59–60.
 54. Neilson JC. Litter odor control: carbon vs. bicarbonate of soda. Proceedings of the ACVB/AVSAB annual meeting. New Orleans, LA. 2008. 31–4.
 55. Neilson JC. Feline litter acceptance. A comparison of brands. Proceedings of the ACVB/AVSAB annual meeting. Seattle, WA; 2009. 10.
 56. Cottam N, Dodman NH. Effect of an odor eliminator on feline litter behaviour. *J Fel Med Surg* 2007;9:44–50.
 57. Neilson JC. Pearl vs. clumping litter preference in a population of shelter cats. Proceedings of the AVSAB annual meeting. 2001. 14.
 58. Borchelt PL. Cat elimination behaviour problems. *Vet Clin North Am Small Anim Pract* 1991;21:257–64.
 59. Smith K, Dreschel NA. A comparison of cat preferences for litterbox substrates. *Newslett Am Vet Soc Anim Behav* 2008;30:6–7.
 60. Neilson JC. Litter preference in cats; scented vs. unscented. Proceedings of the ACVB/AVSAB Scientific Session. Louis, St.; 2011. 8–10.
 61. Mills DS, Munster C. Litter depth preference in the domestic cat. Proceedings of the 4th International Veterinary Behaviour Meeting. Australia, Caloundra; 2003. 201–2.
 62. Neilson JC. Is bigger better? Litterbox size preference test. Proceedings of the ACVB/AVSAB 2008. New Orleans: 46–9.
 63. Neilson JC. Scent preferences in the domestic cat. Proceedings of the 6th International Veterinary Behaviour Meeting. 2007. 171–2.

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Canine aggression

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Introduction

Aggression is the most common behavior problem for which dogs are referred to veterinary behaviorists.¹ Canine aggression not only poses a risk to family members, but also raises public safety concerns. In 2010, the Centers for Disease Control estimated that 4.7 million people in the USA were bitten by dogs; approximately 800 000 of those bites required medical attention and 16 of the attacks were fatal.² The most common bite victims are boys between the ages of 5 and 9.³ Most children are bitten by dogs with which they are familiar, and younger children most often by the family dog in their own home.^{4,5} Aggression has a strong impact on the human–animal bond, leading to emotional stress for the owner, poor quality of life, and an increased risk of relinquishment or euthanasia for the pet.⁶

Aggression is defined as a physical act or threat of action by one individual that reduces the freedom or genetic fitness of another.⁷ This definition encompasses a wide variety of behaviors, from subtle body postures and facial expressions to explosive attacks. Dogs don't have to bite to be characterized as aggressive. A growl, lunge, snap, nip, or even tense body posture can be viewed as aggression. Most types of aggression are treatable, but many are not curable. As with medical diseases, positive outcomes are easier to achieve when treatment is initiated soon after onset and predisposed individuals are targeted for prevention (Box 20.1). There can be a strong genetic component to aggression in certain breeds with pathophysiologic changes reported in the English Springer spaniel (conformation-bred dogs more than field dogs) and the English cocker spaniel (especially associated with golden coat color).^{8–11}

Classification

There is controversy concerning how to classify canine aggression. Generally diagnoses are descriptive, focusing on the motivation, intended target, or situation. Neurophysiologists, however, define only three types of aggression: (1) affective or social aggression in which there is sympathetic arousal – can be described as offensive (confident) or defensive (fearful); (2) predatory aggression; and (3) play-related aggression. The possibility that aggression is abnormal or pathological should also be considered (see Chapter 6). In this chapter, aggression will be categorized first based on motivation and then by target or situation (Box 20.2).

Box 20.1 Quick facts about canine aggression

- Aggression is the most common canine behavior problem referred to behaviorists
- It is often treatable and manageable for a positive, long-term outcome
- It is seldom curable
- Aggression causes damage to the human–animal bond
- It is a relatively common behavioral reason for euthanasia
- With aggression there is risk of injury
- Young children are most common bite victims and most often bitten by dogs that they know
- With aggression there is potential liability for owner and consultant

Box 20.2 Types of canine aggression problems

- Conflict-related
- Resource guarding
- Fear-related
- Territorial and protective
- Predatory
- Pain-induced and irritable
- Play
- Dominance-Related
- Maternal
- Redirected
- Intraspecific miscommunication
- Intraspecific dominance/status related?
- Pathophysiological

Approach to diagnosis and treatment

Pain resulting from a variety of medical problems (e.g., otitis externa, arthritis, atopy, gastroenteritis) can cause or contribute to aggression. Medical diseases (e.g., hyperadrenocorticism, hypothyroidism, seizures, hepatoencephalopathy) can manifest with signs of aggression. Because of the possibility of an underlying medical cause or contributing disease, dogs presented for aggression should receive a physical examination and screening laboratory work, including a minimum of a complete blood count, serum chemistry, urinalysis, and thyroid assessment. This also serves to establish a baseline of health which is necessary before instituting pharmaceutical therapy (see Chapter 6).

Aggressive displays may be viewed directly by the clinician if the circumstance arises; however, most often the diagnosis is based on the history provided by the owner. A video of the behavior can be very helpful, but for safety reasons owners should not be encouraged to provoke aggressive behavior in order to make a recording. By the same token, clinicians should not deliberately provoke aggressive behavior. This type of activity weakens client trust, worsens the behavior of the pet, and puts the clinician and support staff in harm's way. History taking for aggression cases is no different than for medical problems. For example, when a patient presents for vomiting, the owner describes the behavior so that the veterinarian can separate vomiting from regurgitation but does not attempt to elicit the vomiting. Guidelines for behavioral consultations are covered in Chapter 5. Before consulting on cases of aggression, it would be prudent to consider having a release form signed. See Appendix C, form C12, client form 1, printable version available online. This may not always be sufficient to protect against legal action. Liability can vary depending on the case, level of expertise, and the jurisdiction in which the case is heard. Therefore it might be advisable to check with your attorney to determine the type of release that most suits your practice.

The experience and behavior as a puppy, age of onset, signalment, overall health, contributing medical diseases, temperament, body language, vocalizations, inciting stimulus, situations in which the aggression is displayed, target, motivation, and progression should be considered when making a diagnosis (Box 20.3). Repeated exposure and learning (including owner response and victim response)

can modify the pet's behavior, so the practitioner should collect information on any change in the body language, inciting stimuli, and situations for aggression since the first aggressive displays. It is not uncommon for dogs to present with multiple types of aggression. In these cases, the veterinarian should design the treatment plan by prioritizing and addressing the most dangerous types.

Regardless of the type of aggression the general goals of treatment are: (1) prevent further aggression and injury;

Box 20.3 Criteria used for diagnosing aggression

- Experience and behavior as a puppy
- Age of onset
- Signalment
- Overall health/medical problems
- Temperament
- Body language from onset to presentation
- Vocalizations
- Stimulus or trigger
- Situations and context in which the aggression is displayed
- Target
- Owner responses
- Motivation
- Progression

(2) build a stable relationship with the owner using consistency, rewards, and training products where necessary to gain effective control; (3) lower the dog's arousal, anxiety, fear, or impulsivity; and (4) condition an acceptable emotional and behavioral response to inciting stimuli and situations.

An appropriate treatment plan should include: (1) medical evaluation and treatment as necessary; (2) education of the family about all aspects of the problem; (3) safety recommendations; (4) management changes; (5) behavior modification; (6) management tools (e.g., head halter, muzzle, leash); and (7) medication, if warranted (Table 20.1). Specific recommendations will depend on the diagnosis, environment, ability of the owner to implement the plan, latency to attack, and severity of the disease.

Risk assessment: safety comes first! Begin by listing all aggression-eliciting triggers so that strategies can be implemented to ensure that each situation is avoided. If it is not possible to predict and prevent all situations in which aggression might arise, then it may be unsafe and impractical to proceed. Pet owner compliance, in particular the willingness and ability to implement the recommendations, is critical for safety and success. It is especially important to protect children by recommending that the dog be separated from children even if the dog has not shown aggression to children. Children can get bitten when they reach for a dog when the dog is barking or during a dog fight, in contexts of

Table 20.1 General guidelines for treatment of aggression in dogs

Step	Comments
Safety	Identify all situations that might result in aggression and instruct owners to avoid the situation Train owners to read canine body language to prevent and pre-empt before bites (See Chapter 2 and Appendix B: Facial and Body Language Resources) Segregate the dog when aggression-eliciting stimuli are present Separate the dog from children, elderly, unfamiliar people or other at-risk victims Warn the owner of liability Muzzle or use head halter control if avoidance cannot be ensured
Structure/predictability/control	Dog should sit calmly for all interactions and rewards Attention-seeking behavior should be ignored or discouraged Physical punishment should be discontinued
Desensitization and counterconditioning	These exercises should only be attempted under the close supervision of an experienced behavior professional and only if deemed appropriate and necessary Progress should be slow enough that no aggression is elicited during training sessions. If aggression results, stop immediately and resume training on the next day at a level where success can be achieved, proceeding more slowly
Surgery	Neutering should be considered in all dogs with aggression to prevent the character trait being passed to offspring, and because in some cases it might decrease the behavior
Drug/supplement/diet therapy	Selective serotonin reuptake inhibitors (e.g., fluoxetine, paroxetine, sertraline) may be helpful in decreasing arousal, impulsivity, and reactivity Drugs should be prescribed with behavior modification and safety recommendations There may be a positive effect of a reduced-protein diet and concurrent tryptophan supplementation on certain types of aggression Consider trial with a novel protein home-made diet Other drugs and supplements which affect the gabanergic, adrenergic, and serotonergic systems may be helpful in reducing arousal (see Chapters 8 and 9) Synthetic pheromones may be helpful by decreasing anxiety
Physical control and punishment	Treatment should not include confrontation Physical punishment, choke and shock devices, and confrontational techniques, such as alpha rolls or scruff shakes, are dangerous and may result in increased aggression and avoidance
Euthanasia and rehoming	When safety cannot be ensured, euthanasia may need to be considered Except for exceptional circumstances, rehoming might not be an option because it may only move the danger to another environment

resource guarding, and even in benign interactions such as hugging or petting.⁵ Unfortunately, dog owners have limited knowledge of these risks. In one study 82% of respondents thought it was safe for children to kiss and hug their own dogs and 45% indicated they would restrain their dog if it moved away from an unfamiliar child who wanted to pet it.¹² Children are at greater risk of being bitten because they are inherently unpredictable, inconsistent, smaller, and closer to the dog's eye level and mouth.

Management changes are intended to help the owner avoid bites and lower the dog's arousal while behavior modification is implemented. Behavior modification should first be directed at achieving owner control through operant conditioning and then working toward changing the animal's emotional response to a more positive one through classical conditioning. Specific recommendations vary based on diagnosis. Behavior control for most diagnoses is built on obedience training, structure, predictability, consistency, and controlling resources. Various names for exercises that facilitate structure are: learn to earn, nothing in life is free, predictable consequences, and structured interactive training (SIT) say please, (see [Appendix C](#), form C.14, client handout #13, printable version available online). Basically, we will describe this as training a relaxed sit to get anything of value from the owner. If there is some impediment (e.g., arthritis) to teaching SIT, the pet can be taught to back up, touch a hand, or lie down as an acceptable alternative. The behavior itself is not as important as the structure and consistency provided by the predictable interactions with the family. Many owners think that it is sufficient to ask the dog to sit before the food bowl is put down or the leash is put on. However, for this program to work, SIT is required before *any* and *all* attention is given to the dog. Within about 7 days, the dog should be offering this behavior for anything of value instead of having to be instructed to sit. Owners should be advised to ignore all other attempts for attention other than sitting. If it is impossible to ignore the dog, they should walk away. This exercise is simple, yet has a huge impact on the dog's behavior because it makes the dog's interactions with people predictable and consistent, lowering anxiety and aggression. If consequences are predictable the dog learns which behaviors (e.g. sit) get rewards and which don't (e.g. bark, jump, grab). Only then can counter-conditioning and desensitization exercises be used to change the pet's emotional response to inciting stimuli.

Before initiating treatment, the veterinarian should decide if counterconditioning to the stimulus or situation is necessary or safe. Consider the dog who growls at the owner when the owner rolls over in bed at night, inadvertently moving the dog. This would be a difficult stimulus to condition the dog to accept as both the dog and the owner may be asleep or in a state of decreased awareness when it happens. It would be much easier to recommend that the owner simply relegate the dog to sleep in a dog bed or in a crate (see [Appendix C](#), form C.14, client handout #13, printable version available online).

All forms of physical punishment, such as shock, hitting, yelling, prong collars, and hanging by choke collars, should be avoided. These types of activity have been shown to increase aggression.¹³ Dogs that have been subjected to punishment and those without formal training classes are more likely to show aggression and avoidance.^{14,15} Punishing the dog for displaying warning signals (e.g., growling, barking)

Box 20.4 Punishment and its possible effects on aggression

- Escalate aggression
- Lower the threshold for aggression
- Cause redirected aggression
- Destroy the bond between the owner and the pet
- Lead to fear-related aggression
- Cause conflict-related aggression
- Result in injuries
- Decrease warning signals before bites
- Increase the risk of euthanasia

may suppress the signal without treating the underlying problem and may result in the dog learning to bite without warning ([Box 20.4](#)).

As with medical problems, it is important for the veterinarian to diagnose and treat canine aggression problems. Once the dog is diagnosed and the treatment plan is written, it can be turned over (with ongoing oversight) to a qualified applied animal behaviorist or behavioral technician if the veterinarian so chooses. Veterinarians should interview the behaviorists, verify that their methods are reinforcement-based, watch them train various dogs, and know what techniques (e.g., clicker training) and products (e.g., head halter) they are familiar with. In addition, they should set up a protocol for communication each time the dog is seen by either party.

Medications, supplements, and diet changes can be used to reduce anxiety and arousal (see [Box 20.5](#)). When using medication as part of a treatment plan for canine aggression, all recommendations should be documented and the owner should be informed in writing of all risks, particularly for any off-label use. To meet the standard of care, veterinarians must provide behavior modification, management, and/or safety recommendations with medication.

From time to time, there have been anecdotal reports that aggression might be related to dietary ingredients or preservatives. While there are no studies to support these claims, a trial with a novel antigen, vegetarian, or homemade diet could be utilized and the pet challenged with the original diet if improvement is seen. In one small study a low-protein diet with tryptophan supplementation was partially effective in the treatment of territorial aggression¹⁶ (see [Chapter 10](#)).

No discussion of aggression would be complete without mention of euthanasia. The decision to recommend euthanasia is fraught with ethical, moral, and personal dilemmas. Since safety is the primary concern, rehoming the dog is risky. Owners, rescue organizations, and/or the veterinarian may be responsible for future bites after a dog is rehomed. Factors to consider when discussing euthanasia are the prognosis, the ability of the owner to ensure safety, and the dog's quality of life. If the owner is considering this option, the pet should be referred to a qualified veterinary behaviorist for evaluation. Canine aggression is often treatable, extending and improving the quality of life of the pet. Dogs should not be given a negative prognosis simply because they show aggression.

Phone follow-up and in-person rechecks are important for a positive outcome. Owners of aggressive dogs should be contacted at 2-week intervals by support staff or the veterinarian for the best outcome.¹⁷ Do not lose touch with these clients: the risks of injury and liability are too great. In-person

rechecks should be planned for 1–2 months after the first appointment and then as needed for consistent progress.

The role of neutering

Neutering may affect a variety of behaviors but results of gonadectomy studies have been somewhat conflicting. One study suggested marking, mounting, masturbation, and aggression toward other male dogs and territorial aggression might be prevented or reduced by castration.¹⁸ Another study suggested that neutering does not appear to decrease the likelihood of aggression in male dogs, with perhaps the exception of some cases of territorial and intermale aggression.¹⁹ However, one recent study found no effect of neutering on intermale aggression, roaming, or mounting.²⁰

Gonadectomy decreases gonadal steroid hormones and has been correlated with a decrease in sexually dimorphic behaviors.^{21–26} A study of pet dogs suggested that male dogs are more likely to score above the median on owner-directed aggression, and dogs that were neutered/spayed were less likely to score above the median on owner-directed aggression than intact individuals.¹⁴ A study by Guy et al. found that the odds ratio of biting a member of the household was highest for neutered male dogs followed by neutered female dogs, intact male dogs, and the lowest level by intact females.²⁷ Similar effects were seen for growling and possessive aggression.²⁷ In another study by Messam et al., intact males were 1.68 (95% confidence interval (CI) 1.05–2.71) times more likely to bite than castrated males, but 0.80 (95% CI 0.55–1.14) times as likely to bite as intact females.²⁸

Some studies suggest that spayed females are more likely to display certain types of aggression when compared with intact females.^{29,30} An increase in reactivity toward humans with unfamiliar dogs and in aggression toward family members has also been reported after ovariohysterectomy of bitches in several studies.^{29–31} While the cause has not been determined, it may be due to a decrease in estrogen and oxytocin concentrations, both of which may have some antianxiety effects.³² Of course, when female dogs display hormonally related signs of aggression during estrus, as a part of maternal behavior or pseudopregnancy, these will be eliminated by spaying.

Working-dog trainability does not appear to be altered by gonadectomy in general, nor with the age of the dog at the time of gonadectomy.³³

Since there can be a hereditary component to aggression, gonadectomy should seriously be considered for patients with aggressive behavior.

As you can see, even as we gather more information regarding how gonadectomy influences behavior, there is conflicting information and still many unanswered questions. More research is certainly needed.

The role of arousal

Most types of aggression have an associated physiologic response (i.e., fight or flight), including the mobilization of glucose, tachycardia, and tachypnea.³⁴ This is why the treatment of aggression generally includes techniques that focus on changing the emotional state of the dog as opposed to simply attempting to correct the behavior being displayed.

There is also increased memory consolidation and retrieval.³⁴ In other words, dogs are more likely to remember what happened and how they behaved to avoid the stressor when there is a physiologic stress reaction than they are when taught behaviors when they are calm. When a dog is under chronic stress, the threshold for aggression can decrease, causing a general increase in reactivity to stimuli. For example, if a dog has fear-related aggression and storm phobia, the aggression may get worse during storm season due to chronic physiologic stress. Some attacks may be truly unprovoked, while others may seem impulsive and appear unprovoked. In most cases they just appear that way because the owner doesn't see the subtle warning signs or the warning signs may have been muted by punishment. Owners may describe their previously lovable dog as tense, exhibiting a glazed look before displaying aggression. This type of arousal can be associated with any type of aggression. If the dog has a high level of arousal, medications such as selective serotonin reuptake inhibitors or drugs and supplements to reduce anxiety, reactivity, and impulsivity should be considered (see [Chapters 8 and 9](#), [Box 20.5](#)).

The role of dominance and pack theory

Dominance describes the relationship between two individuals, not a personality trait. While dominance was previously thought to be at the core of most owner-directed aggression, recent research suggests that many dogs which display owner-directed aggression are primarily fearful and often in a state of conflict (anxious and uncertain).^{35,36} Although it is tempting to make direct comparisons between wolves and dogs, the domestication of the dog for tens of thousands of years makes absolute comparisons inaccurate and unreliable. Feral dogs sometimes form large groups presumably for safety; however they do not form packs of related individuals, hunt in packs, or care for each other's young as wolves do.^{37–39} Hierarchies do appear to exist among domestic dogs and perhaps with family members with whom they live; however, relationships might more accurately be described in terms of resource-holding potential and learned behaviors (consequences). While pairwise relationships may be seen, a hierarchy is generally not evident.⁴⁰ However, groups of individuals do require a system of organization with some level of social asymmetry in order to resolve conflicts without aggression. Veterinarians who diagnose and treat canine aggression cases should have a good understanding of how to interpret canine body language and whether the dogs behavior is abnormal (see [Box 20.5](#)). See [Chapter 2](#) and [Appendix B](#): Facial and body language resources. In general, dominance may have little relevance in the context of diagnosing and treating canine behavior problems (www.dogwelfarecampaign.org).

Behavior pathology

In each case of aggression, regardless of the diagnosis, careful consideration must be given to whether the dog is behaviorally abnormal (behavior pathology) (see also [Chapter 22](#)). These cases may require drug therapy in conjunction with management and behavior modification, both from the pet's standpoint to improve its mental health and welfare, and

Box 20.5 Behavioral pathology and medication

A dog with an aggression problem might be considered behaviorally abnormal (pathological, mental health disorder) if:

- The dog is exceptionally fearful or anxious
- The dog has poor impulse control
- The aggressive behavior is out of context for the situation
- The aggressive behavior is excessive in relationship to the level of threat
- The dog is aggressive in response to benign social signals or interactions
- The aggressive behavior lacks predictability/consistency
- The dog has an unstable temperament

Drug therapy for these cases may be helpful and might include:

- A daily serotonin reuptake inhibitor (e.g. fluoxetine, paroxetine, sertraline)
- As needed use of a second medication for specific situations (e.g. trazodone, clonidine or a benzodiazepine) or a natural anxiolytic (see [Chapter 9](#))
- Dose adjustments or drug combinations may need to be considered. See [chapter 8](#) and [appendix D](#).

from a behavior modification standpoint to help achieve a satisfactory level of improvement (see [Box 20.5](#)):

- there is a lack of impulse control (impulsivity)
- the response is out of context
- the response is excessive in relationship to the level of threat
- the dog is aggressive to benign challenge
- the aggression lacks predictability (no recognizable stimulus).

Many of these dogs will require medication in combination with the management and behavior modification program, usually a selective serotonin reuptake inhibitor. In some cases a concurrent drug such as trazodone, clonidine or benzodiazepine, might be added for as-needed or ongoing use. Dose adjustments and other drug combinations might also be considered (see [Chapter 8](#) and [Appendix D](#)).

The role of learning

Learning complicates diagnosis because it can significantly change the body language and behaviors that are displayed. Consider the dog presented for growling at the owner when the food bowl is removed. If the motivation for the growling (anxiety about removal of the resource) isn't addressed, but instead the owner verbally disciplines the pet and removes the food bowl, even if the growling ceases the dog still has anxiety in this situation, causing it to try alternate coping strategies such as lunging or biting. When the dog bites, the owner will most likely recoil, even if for a split second, negatively reinforcing the bite. This will cause the biting to increase. It is unreasonable and unsafe to advise an owner to continue to let a dog bite to avoid negatively reinforcing that behavior; however, it is reasonable to recommend that the owner should stop picking up the bowl until the primary motivation is addressed.

Some dogs attempt to communicate with the owner but the signals are ignored, causing the dog to climb the ladder of aggression. Consider the dog presented for aggression toward familiar people when hugged. From the first hug, the

dog may have licked its lips and averted its gaze (signs of stress and disengagement) because hugging is aversive to it. If the owner misses these signs and continues to interact with the dog, it may soon progress from benign signals to more offensive ones. Finally, when the dog bites the owner, she retreats and the behavior is negatively reinforced, teaching the dog to bite instead of warn in more subtle ways. This type of dog may be presented for treatment or euthanasia with a history of unprovoked bites when for days, months, or years the dog had been attempting to signal in a non-offensive way.

Another scenario is the puppy that is play biting. If owners use positive punishment to deter the behavior (hit, squeeze the mouth, pin to the floor), the desire to play may not be lessened but the puppy may become increasingly anxious about the owner's response. If the play biting is also sometimes successful at getting the owners to play, this may place the pet in a situation of conflict since the pet is still motivated to play but uncertain about how the owner will respond, which can progress to handshyness, and conflict-related aggression. Predictable owner responses (SIT training, say please, watch) teaches what behaviors are needed to initiate play (see Handouts 13 and 26 on the website).

For the best possible outcome, each case history should be closely examined for clues of how behaviors have been punished and reinforced to create the behavior for which the dog is being presented.

Risk assessment for aggressive dogs

It would be ideal to be able to assess the risk of injury from a particular dog without a shadow of a doubt, but that is not possible. Dogs are sentient beings and as such their behavior cannot accurately be predicted 100% of the time. In addition, every biting dog was once a dog that had not done so, meaning that if only past behavior is used to predict future behavior, predictions may inevitably be inaccurate. Aggression affects every breed and both sexes. In one study, biting dogs tended to be female, neutered, smaller dogs that live in homes with children, show aggression over food, and are excitable and/or are fearful of children, men, and/or strangers.⁴¹ When severe bites are examined, dogs tend to be larger, male, and purebred.⁴² Other studies have suggested that mixed-breed dogs were most likely to be diagnosed with aggression, and that English Springer spaniels are sometimes overrepresented.^{1,43} The majority of dogs who bite are neutered.²⁷ Large dogs (>18.2 kg) that have a short latency to arousal (i.e., act immediately to minimal stimuli) and are unpredictable are more likely to be euthanized when compared to smaller dogs.⁴⁴ This is most likely due to the amount of damage that results from the bites. Bite inhibition has been used in an attempt to assess the level of danger from a particular dog; however, bite inhibition scales have not been validated. It is not uncommon for a dog to bite with different levels of bite inhibition depending on the situation and victim.

Caution should be used when trying to predict a particular dog's level of aggression. In general, it is best to assume that the dog will bite again and cause injury. This way, bites will generally be avoided, keeping others safe. Still, the veterinarian has to be able to give the owners of an aggressive dog a prognosis. Five categories should be considered when

determining prognosis: (1) latency to arousal (impulsivity); (2) environment; (3) complexity of the situation; (4) potential to do harm; (5) predictability; and (6) emotional stability of the dog. The latency to arousal is how long it takes for the dog to show signs of stress or attack. Signs of stress generally precede an aggressive display and should be used for this measurement. If dog A starts to attack within 1 second of seeing someone, as opposed to dog B that doesn't attack until the person is present for 10 seconds, the latency to arousal is relatively short for the first dog. Dogs with a short latency to arousal will generally be more difficult to manage and more dangerous than dogs with a longer latency to arousal.

The environment is extremely important when considering the potential for a positive outcome. For example, if the presenting complaint is growling at children and the dog lives in a busy household with three children under 5 years old, the environment is a negative prognostic factor. If that same dog lived in a quiet neighborhood with a childless couple, the environment would be a positive prognostic factor. The potential to do harm includes factors such as the size of the dog, bite history, severity of previous bites, targets, and level of arousal. Dogs with a history of pursuing the victim, multiple bites per incident, or more severe bites should be considered more dangerous than dogs that have not bitten (assuming the dog has been in a situation in which it could have bitten). Dogs that have bitten multiple times in one bout, are interrupted, and then when released go back to the victim or become so aroused that they cannot easily be pulled off, should be considered more dangerous. The complexity of the problem includes the presence of concurrent behavior problems, the presence of the trigger stimuli in the environment, the owner's ability to implement the plan, the presence of children or elderly in the house, and the presence of other pets. Care should be taken not to pre-judge clients. If the veterinarian is concerned about the ability of the clients to implement the plan, the clients should be asked directly what they see as the challenges to treatment. Then those challenges can be addressed in the treatment plan. The predictability of the dog includes factors such as whether all aggression-eliciting stimuli can be identified, the presence of identifiable warning signals, and the consistency in which the animal responds to environmental stimuli. For example, if the owner cannot provide an accurate history with a list of triggers, that case will be more difficult and potentially more dangerous to treat than a case where the list is relatively complete. Dogs that display warning signals might be easier to interrupt when compared with dogs who signal in more subtle ways. See [Appendix B: Communication – Facial and Body Language Resources](#). Dogs with unstable temperaments tend to be more dangerous in general. The presence of children in the home is a negative prognostic indicator for canine aggression cases.⁴⁴ Children are more unpredictable, inconsistent, and move more quickly than adults. A large, strong dog that bites children unpredictably without inhibition in a home with small children will pose an extremely high risk for a serious injury ([Table 20.2](#)).

Conflict-related aggression

Conflict-related behaviors are seen when there are competing states of motivation and when there is frustration over the inability to perform desired behaviors (see [Chapter 11](#)).

Table 20.2 Considerations for assessing danger and risk of injury*

Factors	Essential points
Latency to arousal	Length of time after exposure to stimulus before stress response/aggressive display
Predictability	Identifiable situations and stimuli Identifiable warning signals. See Appendix B: Communication: Facial and Body Language Consistency in which the animal responds to aggression-eliciting stimuli
Potential to do harm	Size and strength of animal Intensity of focus/level of arousal Number of bites per incident Degree of bite inhibition/severity of previous bites Willingness to pursue the victim Target for aggression Type of aggression
Environment	Ability of people in the social group to understand management and treatment Ability of people in the social group to control environment Verbal control, dependability of obedience responses Physical control (leash, harness, or head halter) Family size, lifestyle Presence of children or elderly Experience of the family with animals
Complexity of the situation	Concurrent behavioral diagnoses Number of situations/stimuli that trigger aggression Opportunity for confrontations Number of aggression diagnoses
Temperament	Emotional stability of the pet
*Also see ESVC risk assessment position statement (esvce.org) and in recommended reading below.	

Conflict can lead to aggression. Dogs that exhibit conflict-related aggression are often fearful and/or anxious dogs. Dogs with conflict-related aggression are unsure how to avoid confusing or disagreeable interactions with their owners because they lack control over outcomes. Due to inconsistent owner signals and actions, the dog learns that aggression is the best way to stop the interaction (see [the role of learning](#), earlier in this chapter). The dog may initially exhibit signs of submission, anxiety, uncertainty, or fear and then progress to aggression. If the signs (e.g., ears back, horizontal retraction of lips, lip lick, inguinal presentation) are subtle or ignored, the dog enters a state of conflict with a resulting arousal response. The state of arousal can lead to aggression, even when the challenge seems to be relatively benign (e.g., owners attempting to pat a resting dog). For example, a fearful puppy is approached by the owner and told to get off the couch. The puppy hasn't been taught to get off the couch effectively and is confused. When confronted, the puppy displays submissive signaling such as ears back and tail down. The owner responds by pulling the dog by the collar to get it off the couch. If these interactions are repeated, the dog will progress to stronger signals such as growling and eventually biting. The dog is in conflict as to how to respond since its initial appeasing and submissive signals resulted in confrontation and punishment, which ultimately leads to fear and conflict-related aggression.

Diagnosis and prognosis

Conflict-related aggression is exhibited toward social group members or others when the dog is resting, during physical manipulations, and around valuable resources, often with an accompanying ambivalence, submission, or attempts at reconciliation after biting.⁴⁵ Owners often report dogs looking guilty after the aggressive display. This type of aggression can be confused with resource guarding because it occurs under similar circumstances. The diagnosis is made based on the situations in which the aggression is exhibited, the targets of the aggression, and the pet's overall demeanor. Dogs that display conflict-related aggression might target social group members during physical interactions, and around resources or resting places, as might dogs with dominance aggression. Dogs with conflict-related aggression would be anxious, fearful and uncertain or submissive. Dogs with dominance-related aggression are confident and dogs with conflict-related aggression are generally anxious, submissive, or fearful. In addition, they may have other fear and anxiety-related disorders, such as separation anxiety or storm phobia. On the other hand, resource guarding is exhibited toward social group members, unfamiliar people, and/or animals and is exhibited only in the presence of valued resources.

While body language is important to the diagnosis, care should be taken to consider the dog's demeanor at the time of onset. Negative reinforcement of aggressive behavior and positive punishment of social signaling can produce aggressive displays consisting of confident body postures (e.g., ears forward, standing tall, tail held vertically) even when the dog's primary motivation is fear or conflict. It is likely that many problems diagnosed as dominance-related aggression are actually due to conflict, resource-holding potential, learning or behavioral pathologies/abnormal behavior (see [Box 20.5](#)).^{40,45} Conflict-related aggression can usually be improved in 2–3 months. However, like many chronic medical problems (e.g., atopy, arthritis), management and treatment is lifelong.

Management and treatment

A list of situations and stimuli that elicit aggressive behavior should be made and the owner should be advised to avoid them entirely. For example, if the dog is aggressive when disturbed while sleeping on the couch, the recommendation would be to keep the dog off the couch. Owners should be told to separate their dog from young children and anyone who cannot follow the treatment plan. Situations where conditioning desirable outcomes are impractical should be avoided for the life of the dog. Next, behavior modification recommendations can be made. These recommendations should focus on the behaviors that are necessary for safe management. For example, if the dog growls when bumped by the owner in bed overnight, the recommendations would include preventing bed access, teaching "off" (for rewards), and giving the dog its own bed. The primary focus should be on consistent, structured interactions where the pet learns to sit and settle to get everything of value, and receives rewards whenever it is seen engaging in desirable behaviors (relaxed sit, down or on its bed). Training sessions should focus on reward training behaviors that can be used to teach desirable outcomes, e.g. sit/watch, down/stay, go to mat

Table 20.3 Treatment of conflict-related aggression

Goal	Structure, predictability, and consistency in all interactions*
Environmental changes and safety	Avoid interactions which elicit aggression Separate from children or any family member who cannot follow the treatment plan Keep dog off the furniture, out of rooms, or away from areas where aggression is exhibited Restrict access to resources which cause aggression (e.g., bones) or separate away from human interaction (e.g. room, crate) when giving resources that might be guarded (e.g., feeding toys) Discontinue all confrontations and positive punishment Use muzzles, head halters, and leashes as needed
Structure and control	Teach the pet to come, sit, and stay on command dependably using positive reinforcement Predictable consequences: sit prior to all interactions Ignore attention seeking behavior except for desirable sit or down behaviors Give rewards whenever desirable behaviors are observed
Behavior modification	Teach behaviors which allow the owner to manage the dog without eliciting aggression Counterconditioning and desensitization to change the pet's behavior in aggression-triggering situations
Medication	Selective serotonin reuptake inhibitors (fluoxetine, paroxetine, sertraline) may be helpful in decreasing arousal, impulsivity, and reactivity. It may take several weeks to see changes
*Also see Box C14 (handout 13) structured interactions.	

using a head halter if necessary to insure for safe and effective control. See handouts 13, 23 and 26 online. At a recheck in 1–2 months the veterinarian can assess which behaviors might then be improved with counterconditioning (e.g. lifting, patting) and prescribe specific advice for these behaviors. Structure and consistency in rewarding only what is desirable, provides predictability and control from the pet's perspective while learning what is socially acceptable behaviors. If the dog is excessively fearful or anxious or behaviorally abnormal consider concurrent medication (see [Box 20.5](#) and [Table 20.3](#)).

Prevention

A structured relationship with the owner based on consistency and positive reinforcement training starting in puppyhood is the best prevention for this type of aggression. The puppy should be habituated to all types of handling as soon as it is adopted provided there are no signs of fear or anxiety. Puppy socialization and basic training classes that use positive reinforcement help set the stage for consistent interactions as the dog ages. Harsh training methods and punishment should be avoided. Reinforcement and correction

should be fairly and consistently applied in all situations by all family members throughout the life of the dog.

CASE EXAMPLE

Rocko, a 4-year-old, 20-kg, male neutered American bulldog, was presented for biting both of his owners when reached for, petted, or when they tried to remove his blanket. He had not been to any formal obedience training and didn't respond to the owner's verbal commands. He lived in a house with two adult owners with no children. The first sign of aggression was at 8 months old when the owners took Rocko to visit a relative with two dogs. Rocko was not well socialized and didn't get along well with the other dogs. He stayed on the couch, curled in a ball for most of the visit. When the owner went to put his leash on, he snapped at her. The owners generally yelled at him or smacked him across the face with an open hand when he showed aggression. The aggression had continued to worsen over the years. Rocko was also fearful of storms and loud noises. He refused to walk outside on storm days. In the examination room, Rocko often faced away from the owners, yet when the female owner left the room, he went to the door and whined the entire time that she was gone. He was not responsive at all to the owners' commands. Often, when they asked him to do something like "come," he averted his gaze and froze. He was fearful during his physical examination, but was not aggressive. The physical examination was within normal limits.

Rocko was diagnosed with conflict-related aggression, noise fear, and storm fear. The owners were sent home with a DVD (*Canine Behavior: Observing and Interpreting Canine Body Postures*, by S Hetts, DQ Estep, D Grant) illustrating canine body language so that they could read Rocko's warning signs and avoid bites. Because Rocko's behavior was predictable and avoidable, no medication or supplements were prescribed.

The owner was told to avoid pushing or pulling him, cease all punishment, institute a program of sit for all interactions, keep him off the furniture, and avoid interactions with children. She was also told to teach the dog to leave it, come, sit, watch, and off using positive reinforcement techniques so that he could be moved without confrontation. Finally, they were to create a safe spot for him for use during thunderstorms and fireworks.

In 2 weeks, the owners reported that Rocko had not shown aggression. They understood how to read his body language and they noticed that he was stressed a lot of the time, but especially on storm days. At his recheck appointment after 4 weeks, Rocko was visibly less stressed in the examination room. He was interactive with the owners and did not orient away from them as much. He was more responsive to commands but not as much as was necessary to control him. The owners were told to continue with the current plan for life, enroll in a positive reinforcement obedience class to build a positive working relationship with Rocko, and to use a storm CD to countercondition him to the sounds that were making him fearful. In 6 months, Rocko continued to do well as long as the owners followed the treatment plan.

Resource guarding

Resource guarding (possessive aggression) is a common problem in dogs. It is a normal behavior which can become maladaptive. It may be directed at familiar and unfamiliar humans or other animals that approach the dog when it is near or in possession of something it values. Guarded items can include food bowls, chew toys, people, pets, or places. Novel or stolen items are very likely to be guarded. Resource guarding is accompanied by physiologic arousal (e.g., dilated

pupils, tense body posture) and stems from an underlying anxiety that items will be removed when the dog is approached. Owners often negatively reinforce this behavior by backing away when the pet growls. In addition, these dogs have not been taught to expect a reward for relinquishing an item or to relinquish items on cue. In other words, the dog is anxious about people taking its stuff and then its worst fear – that its stuff will be taken away – comes true. If the dog runs away, hides, or growls, the owner often chases it and forcefully takes the item. Through these interactions, the dog learns fearful body postures and avoidance are not effective in inhibiting threatening behavior. The dog then starts to growl or bite, which it quickly learns is an effective way to protect items of value. The age of onset is often prior to 16 weeks of age. Initial onset may occur in adulthood in dogs on reducing diets or medication that increases hunger (e.g., corticosteroids) or with medical conditions that increase appetite (e.g., hyperadrenocorticism). When affected puppies are identified early, the progression of the disorder can usually be stopped and the long-term outcome can be positive, at least from the standpoint of management. Most often, resource-holding potential (willingness to fight for an object) is not correlated with status. This can be both a normal desire to maintain valuable possessions and an anxiety-related disorder. It occurs in both males and females and affected dogs may be confident or fearful. Severely affected dogs may guard the entire kitchen or the doorway to the room where the food is prepared. Some dogs may bury items in the cushions of the couch and then guard the couch or living room.

Diagnosis and prognosis

The dog barks, growls, lunges, snaps, becomes tense, and/or bites when a person or animal approaches it while it is in possession of or near something it does not want to relinquish. Defensive aggression shown by a dog that has frequently been physically punished or yelled at for stealing the owner's possessions may appear to be resource guarding. A detailed history should differentiate the two. The pet that is exhibiting defensive aggression will historically or at the time of presentation show behavioral and postural signs of fear, have other fear-related or anxiety-related disorders, or show aggression in other circumstances as well.

Prognosis depends on the chronicity, severity, negative conditioning, and age of onset. Control can be achieved in most cases within 2–3 months. At a recheck appointment, if the dog is doing well, the owner can start a counterconditioning process to try to change the dog's emotional state around previously guarded items if safe and practical. For some households it might be more practical to implement avoidance for the life of the dog. Avoidance is a reasonable strategy because it is safe, and the behavior may become weaker and dissipate if the behavior is not elicited for a long period. For severely or chronically affected dogs, the behavior will be more difficult to resolve. Nonetheless, safe management can reasonably be achieved in most cases.

Management and treatment

All situations in which the dog guards should be avoided by closing doors and restricting access to valuable items. For

example, if the dog only guards bones the owner should not give the dog bones or give them in a room with a barrier. All family members should avoid interacting with the dog in situations where it has shown aggression. Owners should be instructed to make a trade for a higher-value item in order to get stolen items from their pet before the behavior modification has been completed. Owners may be confused because they may think that they are rewarding the guarding behavior when they make a trade. However, this is not the case. The aggression associated with guarding is often a classically conditioned, anxiety-related behavior which will not increase with positive reinforcement. Once the dog is showing aggression, the opportunity for rational teaching is gone. The owner needs to manage the crisis by trading with the dog and work on the behavior modification when the dog is not aroused or has objects that it will readily relinquish. There is a chance that the dog will learn to find or steal items and bring them to the owner to trade. This behavior is operantly conditioned and can easily be corrected if the owner so chooses with prevention, supervision or interruptions such as with a remote spray collar or head harness with long leash (drag line attached) to interrupt or deter stealing behavior. Owners should never attempt to take items from the dog's mouth by reaching with their hand, slapping under the chin, blowing in the nose, or prying the mouth open. These practices create situations where the owner is likely to be bitten. Verbal and physical corrections, training with fake hands, or exercises where the food bowl is repeatedly removed are contraindicated as these dogs are generally highly aroused and willing to bite to keep their treasure. In dire situations, if the pet refuses to trade a dangerous or expensive item for a piece of food, Spray Shield (a safe, nontoxic, neutral-pH, citronella spray) can be used to get the pet to relinquish the object. This should be done calmly and casually without looking the dog in the eye or saying anything. Shock collars should not be used.

Behavior modification techniques are the cornerstone of treatment. When the owner approaches the dog and the dog has an item, the owner should either give the dog something better in return or wait until the item is dropped and reward immediately. This type of conditioning teaches the dog that when the owner approaches, bad things don't always happen. In fact, good things happen when the item is dropped. The owner can actively work on training the "drop" command using items of low value and reinforcing with high-level rewards (see [Appendix C](#), form C.17, client handout #7, printable version available online). The dog should also actively be taught basic control and management tools (e.g., leave it, sit, go to your bed) (see [Appendix C](#), forms C.14 and C.15 and [Box 7.2](#), client handouts, 13, 23 and 25, client handouts #13 and #25, printable versions available online). If the pet growls when someone walks within 1 meter (3 feet) of its bed, family members can walk by at 1.5 meters (4 feet) and toss pieces of meat to the pet. This should be repeated frequently, very gradually moving closer to the pet.

Simple management changes such as securing the trash can, picking up frequently stolen items, feeding the dog in a low-traffic area, more frequent small meals, feeding from food toys (which the dog has previously been trained to drop for rewards), and segregating the dog out of areas where food is prepared or served should be made. Desensitization and counterconditioning can be attempted at a recheck

Table 20.4 Management and treatment of resource guarding

Goal	Relieve anxiety around resources
Environmental changes and safety	Feed confined in a separate room Do not give valuable resources except during confinement. Consider removing strongly guarded bones, chews or highly favored toys indefinitely Move the dog's bed to an appropriate and safe area Pick up, lock away, pet-proof, secure containers, close doors to prevent items being stolen Keep the dog away from areas which have been guarded Trade up for items until the owner has completed the behavior modification If necessary, use Spray Shield or leave attached a drag line with head halter to retrieve dangerous or expensive objects Avoid confrontations and physical punishment
Behavior modification	Teach "leave it" and "give-drop" using positive reinforcement and a positive tone of voice Require the pet to sit for all interactions Do not allow the pet to be pushy for attention Countercondition to approaches around valuable resources if desired
Medication	Selective serotonin reuptake inhibitors (fluoxetine, paroxetine, sertraline) may be helpful in decreasing arousal, impulsivity, and reactivity)

appointment (see prevention, below); however, once owners are accustomed to the management changes and have achieved control, they often don't need or want to attempt further treatment. If the dog is excessively fearful or anxious or behaviorally abnormal consider concurrent medication (see [Box 20.5](#) and [Table 20.4](#)).

Prevention

Positive reinforcement obedience training, structured interactions, and handling exercises should begin at adoption. The basic conditioning described above should be applied to puppies as well. Owners should avoid sticking their hands in the dog's bowl or taking the bowl away suddenly. While many dogs are accepting of this type of intrusion, puppies prone to resource guarding are not. Instead, the owner should condition the dog to accept close contact by pairing food with their approaches at the bowl. When the puppy is eating, the owner should pass by, say the dog's name, and then drop food into the bowl (see [Appendix C](#), form C.13, client handout #11, printable version available online). In addition, if the owners have been practicing "sit" and "leave it" cues, they can be used to ask the dog to stop eating and sit. Then the owner can take the bowl away, hand the dog a very special treat for compliance, and set the bowl back down, perhaps with an additional treat inside. The dog has just learned that the owner is predictable, it understands how to behave appropriately around the owner and food items, and that when the dog is compliant, it is a win-win situation.

CASE EXAMPLE

Remy, a 6-month-old, 22-kg, female spayed golden retriever, was presented for growling at family members when approached while she was chewing a raw hide, had possession of a stolen item, or was eating meals. The behavior started at 2 months of age. Her physical examination was within normal limits. She was fed a commercial puppy diet twice daily in the kitchen. The family consisted of two adults and one cat. The owners had been taking the bowl away without warning twice each time that the dog ate a meal. If Remy growled when they approached her raw hide or bowl, the owners reached for her and held her by the scruff. The behavior had progressively worsened in the past 2 months. She had been through an obedience class starting at 4 months. The owners were instructed to stop giving her raw hides, pick up any item that could potentially be stolen, feed her in a crate out of the kitchen, and stop reaching for her when she was eating or had a raw hide. They were to teach “leave it” (see [Appendix C](#), form C.15, client handout #25, printable version available online), ask her to sit for all interactions, and use food lures to move her away from items that she was guarding until she was trained to leave it. In 2 weeks, Remy understood “leave it,” was regularly walking away from items that she previously would have guarded, and was sitting automatically when she wanted attention. The owner was to start counterconditioning at the food bowl and slowly increase the value of the items that were used for “leave it” exercises. In 6 weeks, the owner reported that Remy could be approached at the food bowl without aggression. In addition, when the owner approached the bowl she sat automatically to wait for her treat. She relinquished items on cue when she was told to leave it but the owner had decided for ultimate safety not to give her raw hides anymore.

Fear-related aggression

Fear-related aggression is triggered by a stimulus that appears threatening to the dog. Fear is often an underlying factor in many forms of aggression. Any stimulus, from cars and skateboards, to unfamiliar people or dogs, can produce fear and a resulting aggressive response. Fear-related aggression has an associated autonomic nervous system response accompanied by often exaggerated physiological changes. Inadequate socialization, traumatic experiences, learning, and genetics can contribute to the development of fear-related aggression (see [Chapter 12](#)). Owner behavior can increase this type of aggression. Punishment, inconsistent responses, and removing the opportunity for the pet to escape or deal with the situation appropriately will aggravate fear-related aggression. When faced with the fear-producing stimulus, if the owner does nothing to keep the dog safe (e.g., avoid the stimulus, teach the dog an alternate behavior), the dog will find a way to stay safe, which may include defensive aggression. If the owner uses harsh or physical punishment, the autonomic nervous system arousal level will increase, increasing the animal's state of agitation reactivity. Warning signals may be punished, causing the dog to be more dangerous (i.e., no warning before attack). If the owner acts nervous, grabs the leash tightly, or acts erratically, the dog's nervousness may be further enhanced. Fear cannot be positively reinforced, so petting the dog at this time will not make the dog more fearful and aggressive. However, unless the dog can be sufficiently calmed, it does not help the dog cope, which over time will increase the aggression and may positively reinforce fear-related operant behaviors

Table 20.5 Characteristics of fear-related aggression

Target	Any person, animal, or inanimate object
Character of aggression	Aggression may occur as the stimulus approaches but bites may initially occur when the victim turns or walks away, and progress over time to bites during face to face encounters Nipping to mauling bites Often, the dog bites and retreats
Overall demeanor	Fearful, anxious May have concurrent anxiety-related diagnoses Sire, dam, or littermates may be affected
Body language	As a puppy: fearful, anxious, aloof As the problem progresses, and aggression becomes an effective tool for dealing with situations, may see more confident body language After the attack, the dog may try to escape or look deferential, submissive, or “guilty”
Situations	Any situation that is perceived as threatening to the animal

(e.g., growling, biting, escape, staying close to the owner). Genetics will play a role in determining the threshold for a fear response. Some dogs require a strong stimulus to elicit fear, while others become extremely anxious in response to mild stimuli or any auditory, visual or perhaps even odor stimulus that is unfamiliar. Because there can be a genetic component to fear, dogs with fear-related aggression should not be bred ([Table 20.5](#)).

Diagnosis and prognosis

Fear-related aggression is generally accompanied by fearful body language (e.g., tail down, ears back, crouched body, weight shifted away, attempts to escape) and signs of arousal (e.g., piloerection, dilated pupils, tachypnea, defecation, urination). Posturing may be offensive when the dog is behind a barrier or the stimulus is at a distance but increasingly fearful as the stimulus approaches.⁴⁶ At the outset, the dog may display fearful posturing, threats, and the bites may be mild (see [Chapter 2](#) and [Appendix B: Communication - Facial and Body Language Resources](#)). However, over time warning signals may disappear, the attacks may be more unpredictable, the bites may become more severe, and posturing may appear more confident as the pet learns that the aggression successfully removes the threat. Fear-related aggressive dogs may be more aggressive when on leash, and may display appropriate behaviors when off leash and allowed to approach on their own accord. This is likely due to the fact that a pet on leash may develop an aggressive strategy since it is restricted from escape. Inappropriate owner responses (e.g., tension on the leash, anxiety, agitation, frustration, punishment) will further condition unpleasant associations when meeting new people or dogs. Some dogs will approach as if they want to interact and then retreat when someone reaches for them. These dogs may be inherently anxious or insufficiently socialized and therefore in conflict when meeting unfamiliar people or dogs. A dog may be fearful and anxious only with certain people or dogs because of previous unpleasant experiences or lack of

socialization to specific individuals (e.g., children, men, large dogs) or react to all unfamiliar people or dogs. The family should be questioned closely about the dog's behavior as a puppy to determine if the dog was exuberant and friendly, uncertain or showed avoidance of stimuli. Dogs with fear-related aggression may initially bite from behind. When a person approaches, the pet may feel threatened and growl, but fear may inhibit lunging or contact. When the person turns and walks away, the aggression may be disinhibited and the dog may lunge, chase, or bite.

Dogs with fear-related aggression are particularly susceptible to the neurochemical effects of chronic stress. For example, if a dog has thunderstorm phobia, it is likely to be under stress regularly during thunderstorm season. During this time, the latency to arousal may decrease, causing an increased likelihood of aggression.

Dogs that exhibit fear-related aggression are acting to keep themselves safe and remove the fear-eliciting stimuli. If a dog sits near the owner when afraid, it may be seeking a secure location from which it may then defend itself if the stimulus continues to approach. If the owner responds with cues which keep the dog safe and repel the stimuli, the dog will be more likely to exhibit those behaviors in the future. This is often misinterpreted by observers as an effort to defend the owner from the stimulus, when in fact, the dog is fearful and retreating to the owner for support. It is the owner's responsibility to first insure safety, and to work with the dog over time to reduce fear of the stimulus.

Fear is a common cause of aggression toward children. Families often report that the dog was fine with or ambivalent to a particular child until the child started crawling or toddling. When the child starts to crawl or walk, it is much more likely to interact physically with the pet and possibly corner it. When fearful dogs can't escape, they are more likely to react with aggression.

Medications and supplements may be needed to help decrease the fear and arousal so that the behavior modification can be implemented in dogs with fear-related aggression. A cure is highly unlikely unless it is an acute presentation due to a traumatic event. Dogs which were not socialized or have a hereditary predisposition to fear-related aggression will have to be managed and controlled throughout their lifetime. The owner may get good control in 3 months; however, more severely affected dogs will require lifelong management.

Management and treatment

The keys to treating fear-related aggression successfully are: (1) safe management and avoidance; (2) providing structure and predictability; (3) teaching the pet coping tools and using those when it is fearful; (4) desensitization and counterconditioning to reduce arousal and fear. While the final goal is to replace the pet's fear response with a calm response, this can be difficult and tedious work and may be impractical for some owners and some households. Before this can start, the pet's arousal should be decreased and control tools should be taught. Identify all situations and stimuli that elicit fear and instruct the owner to avoid those situations. For example, if the dog is reactive toward bicycles, the owner shouldn't walk the dog near these stimuli or should walk it in a fenced yard until the dog can complete the control exercises. This will generally take 1–2 months. The benefits

of a long walk in this case are outweighed by the benefits of reducing the chronic stress response. Structure and predictability can be promoted using structured interactive training (see [Appendix C](#), form C.14, client handout #13, printable version available online). Control exercises promote desirable behaviors which are incompatible with negative behavior. For example, if the dog is reactive toward dogs on the street, it should be taught to sit, walk on loose leash, leave it, and watch (see [Appendix C](#), forms C.15 and C.16 client handouts #25 and #26, printable versions available online). (It is not uncommon for owners to use these commands in a threatening tone of voice upon encountering a fear-eliciting stimulus. Instead they should use a calm, friendly and upbeat tone in these situations.) These behaviors teach the dog to be still (not lunge), look away from the stimulus (break focus), and pay attention to the owner. All behavior modification should use positive reinforcement. Physical punishment (e.g., shock, choke collars, leash corrections) increases fear and is contraindicated. It can also make the dog fearful of the owner, which degrades the cornerstone of treatment (teaching the dog that it can stay safe by following the owner's instruction).

A basket muzzle can be a useful adjunct to treatment ([Figure 20.1](#)) because it improves owner confidence and provides an opportunity to safely assess the dog's response to stimuli. (see [Appendix C](#), form C.19, client handout #27, printable version available online). A muzzle should be used when the owner can monitor the dog and is working on the behavior modification. The dog should not wear a muzzle when alone or loose with the fear-evoking stimuli. For example, if the dog is afraid of new people, the owner should not muzzle the dog and then let the dog interact with no opportunity to maintain a relaxed distance. This will increase the fear and future aggression because the dog doesn't have an opportunity for escape and can't repel the stimuli. A better option is for the owner to take control with a leash and head halter (see [Figures 4.13, 4.18–4.21](#)). There are various types of head halters (Halti, Gentle Leader, Snoot Loop, New Trix, Comfort Trainer), all with slight differences, but using the same concept of controlling the head. Many dogs don't like head halters when they are first fitted, but can learn to wear them with conditioning. Head halters that encircle the muzzle with a leash attachment



Figure 20.1 Dog wearing basket muzzle.

below the chin can provide safety by reorienting the head away from the stimulus and closing the mouth. Some head halters, such as the Gentle Leader, have been designed to be left on the dog with a leash attached so that when problems arise, the owners can effectively prevent or interrupt undesirable behaviors and guide the dog to a desirable end point (e.g., sit, watch, leave it). However, unlike the muzzle, a head halter requires owner supervision and intervention to ensure safety. Dogs should be taught how to wear a head halter and a muzzle before either is used in situations where the dog is aroused (see [Appendix C](#), form C.19, client handout #27, printable version available online, and [Chapter 4](#) for muzzle fitting). The Calming Cap ([Figure 20.2](#)) can help reduce arousal and reactivity by blocking visual stimuli. Relaxation exercises (see [Chapter 7](#) and [Box 7.2](#), client handout #23, printable version available online) can be taught to help facilitate a change in the dog's emotional state. If the dog has been taught to relax on a mat, the mat can be transported to other locations.

Once the dog is under good control, desensitization and counterconditioning can be implemented. This type of treatment takes time and commitment and should only be done with professional supervision because the aggression can increase if the stimulus exposure is not controlled, gradually increased and always associated with positive outcomes. See [Box 12.4](#), Client Handout 9 online. If the dog is aggressive toward children, safe management without contact is the most important approach, most likely lifelong. Desensitization and counterconditioning should be used to teach the pet to be relaxed around children, but physical interaction is usually not a reasonable, safe goal. If the dog is excessively fearful or anxious or behaviorally abnormal consider concurrent medication (see [Box 20.5](#) and [Table 20.6](#)).

Prevention

Socialization between 3 and 12 weeks of age is extremely important. The young dog should meet many different types

of people, animals, and objects in controlled, pleasant situations as often as possible during these months. Puppy classes should be started after the first vaccinations and deworming and as close to 8 weeks as possible for best results. Owners should use positive reinforcement rather than punishment and maintain structured predictable relationships. Since fear and reactivity in puppies are likely predictive of problems in adulthood, at-risk puppies should be given custom socialization programs or referred to a qualified veterinary or applied animal behaviorist.⁴⁷ One study showed that, when advice to new puppy owners was provided by a veterinary behaviorist, there were fewer problems as adults, including aggression toward people and other dogs.⁴⁸



Figure 20.2 Dog fitted with Calming Cap. (Courtesy of Premier Pet Products. Now distributed by [thundershirt.com](#))

Table 20.6 Management of fear-related aggression

Goal	Decrease fear, teach alternate coping strategies
Safety	Identify and avoid all situations which stimulate aggression until the owner has reward-based control (training) over the dog Use a leash and a muzzle or head halter as needed for control Do not allow interactions with children or any person or pet at risk for a bite
Environmental changes	Create a safe place for the dog if it is afraid of visitors in the home
Behavior modification	Discontinue all confrontations and punishment Review obedience commands that can be used for future introductions Teach control tools. Set up structured interactions using a "sit for all interactions" program Train to relax on cue in the absence of stimuli When the pet is under good control, reintroduce to the stimuli which elicit fear using desensitization and counterconditioning
Medications	Medications are indicated when stimuli cannot be avoided (e.g., the pet must share an elevator with unfamiliar people), the latency to arousal is short, the autonomic nervous system response is high, or if the threshold distance for starting desensitization is too far to be practical Selective serotonin reuptake inhibitors (fluoxetine, paroxetine, sertraline) may be helpful in reducing anxiety and decreasing arousal, impulsivity, and reactivity. Adjunctive therapy with natural products, trazodone, clonidine or perhaps a benzodiazepine might also be considered either prior to expected exposures or as ongoing concurrent therapy.

CASE EXAMPLE

Joe, a 1.45-kg, 10-week-old, male miniature poodle was presented for growling and biting when held during the past 2 weeks. The owner had tried holding him tightly until he calmed down (1–2 minutes). This occurred 5–6 times a week. He had no training or socialization. He was acquired from a breeder at 8 weeks and lived with two retired adults and no children. The owners didn't meet the sire or the dam. The physical examination was within normal limits. The first incident was when Joe was in the back yard and he kept running under the bushes. The owner continually told him "no," and pulled him out. When he ran under the bushes the third time, the owner grabbed him by the scruff of his neck, pulled him out, yelled "no", and carried him inside. As she was carrying him, he began to bite and growl. The owner held his muzzle and said "no," to which he responded with more growling, at which point she put him down.

During the examination, Joe was quiet and spent time lying under a chair. He explored the room, but was fearful when interacting with the clinician. He would approach for treats, then retreat. The physical examination was within normal limits. The owner was educated as to how to read dog body language with a DVD (*Canine Behavior: Observing and Interpreting Canine Body Postures*, by S Hetts, DQ Estep, D Grant). She was given the following safety recommendations: (1) stop physical punishment; (2) don't push or pull him; (3) don't let new people pet him; and (4) avoid stimuli that frighten him (e.g., picking him up). She was given the following behavior modification recommendations: (1) have the dog sit for everything of value; (2) enroll in a positive reinforcement puppy socialization class; (3) socialize further at home; (4) desensitize and countercondition to

handling, restraint, and lifting; and (5) use only positive reinforcement.

After 1 month the owners reported that they had started puppy socialization classes, but that Joe was fearful in class. He was still growling at the owner. The owner was instructed to continue the treatment plan. By 2 months, the owner was able to handle and brush him. She was actively socializing him and he was showing less fear in those situations but was now showing aggression at the veterinarian's office. The owner was instructed to desensitize and countercondition him at the veterinarian's office. In 5 months, he was attending puppy playtime, had started his second round of obedience classes, was more confident when he met new people, and was less fearful at the veterinarian's office. At 7 months, the owner tried to groom him at home and he bit her. She held him down and yelled at him. After that he began showing more stress body language cues and anxiety. The owner was reminded that punishment was contraindicated and was re-educated on counterconditioning. At 8 months, a complete blood count, serum chemistry, thyroxine, and free thyroxine were found to be within normal limits. The pet (3 kg body weight) was started on sertraline (6 mg q 24 hours) to decrease arousal and the emergence of new fears. At 12 months, the counterconditioning had reduced the aggression toward strangers, veterinarians, and the owner. After 3 years, he was friendly with people, active in agility and obedience, and was able to be examined at the veterinarian's office without incident. When the sertraline was discontinued, the dog became more fearful, but not aggressive. Therefore treatment with sertraline was reinstituted and he continued to do well.

Territorial and protective aggression

Territorial aggression is defined by target, target behavior, and location. The behavior is generally manifested in the dog's home or yard, or perhaps the car, and is directed toward unfamiliar people or animals approaching or entering the territory. *Protective aggression* is defined by target, target behavior, and the presence of a pet and/or human family member. The behavior is directed toward unfamiliar people or animals approaching or acting in a way the pet perceives to be threatening, and may be manifested in or away from the dog's home. The defining variable is the presence of a family member. A dog with protective aggression may be friendly to unfamiliar people when the family is not present; however, dogs that are fearful may avoid interactions (flight) when the family member is not present and become aggressive when with the family member (fight). It is not uncommon for dogs to have problems concurrently with both behaviors.

Territorial behaviors are to some extent a variant of normal behavior (i.e. intruder on territory). Problems occur when the pet has a very low threshold for arousal and is aggressive in relatively benign situations, and/or the pet's response is excessive for the needs of the situation. For certain breeds, there may be a hereditary predisposition. Anxiety and fear also play a role in the development or progression of aggression since threats and aggressive displays are more likely to be exhibited toward novel, unfamiliar, or fear-eliciting stimuli. If owners use positive punishment in an attempt to suppress the behavior, or become angry or frustrated each time the behavior is displayed, the association with unfamiliar people and animals will become increasingly more negative.

Aggression is negatively reinforced each time the stimulus (person or dog) leaves or passes by the property while the pet is displaying the territorial behavior (e.g., barking, lunging, growling). Territorial dogs are often allowed to practice the behavior daily at doors, windows, in the yard, or on a tieout. The longer that the dog has been allowed to do this, the more difficult it will be to correct this behavior. Fearful dogs may be more aroused in general, causing aggressive displays to be more intense and prolonged. They also generally recover (return to baseline) more slowly than a territorially/protective aggressive dog, which may cease the behavior as soon as the threat is removed.

Diagnosis and prognosis

The dog exhibits aggression when an unfamiliar person or animal approaches an area or person over which the dog is protective. This is manifested by aggressive postures and vocalizations. The postures may be fearful or confident. The behavior can be seen in both males and females, with initial signs typically noted during the first year of life. It can be difficult to differentiate territorial or protective aggression from fear-related aggression. To determine whether fear is a component, look to the dog's overall demeanor, the target, and the location. Fearful behaviors may begin to emerge at an earlier age than territorial behaviors. Fearful dogs will also be fearful when off property. However, if owners report no aggression off property, the veterinarian should question whether the dog attempts to avoid interactions with unfamiliar stimuli. If the dog is friendly off the property and aggressive on the property, the dog has territorial aggression. If the dog is fearful or aloof on and off property and/or has

Table 20.7 Comparison of territorial and protective aggression to fear-related aggression

	Territorial and protective aggression	Fear-related aggression
Target	Unfamiliar people	All or specific persons, animals, or inanimate objects. May be unfamiliar or have a previous negative association
Character of aggression	Nipping to mauling bites	Bites may initially occur as the victim turns or walks away, but as disorder progresses often occur from the front Nipping and inhibited bites more likely; mauling bites less likely Not uncommon for the dog to bite and retreat, then bite and retreat
Body language	Offensive during attack	Fearful, anxious initially, but may progress to offensive through negative reinforcement May have concurrent anxiety-related diagnoses
Overall demeanor	Confident, may be friendly when away from home (territorial) or when family member not present (protective)	Anxious, aloof, not friendly. If socially deprived or genetic, may have exhibited fear as a puppy
Situations	Only in the pet's territory (home, yard, property, car), or with specific family members unless exhibiting other types of aggression concurrently (e.g. fear)	Any location; however aggression may be increased when pet has retreated to a location where it is no longer able or willing to flee e.g. cornered, on its own territory, with a family member

concurrent anxiety or fear-based disorders, the dog has fear-related aggression or both (Table 20.7). If the pet is aggressive on and off property, but only when a family member is present, it most likely is exhibiting protective aggression.

The prognosis is good provided the family has good control over the dog and the environment. If stimulus exposure cannot be avoided then the pet further learns that the behavior is successful at causing the stimulus to retreat and the prognosis is more guarded. In addition, successful desensitization and counterconditioning require that all exposure is graduated (beginning below the threshold that causes aggression) and outcomes are positive. If the dog has concurrent fear it will be more difficult to resolve the behavior because there is an associated autonomic nervous system response.

Management and treatment

The first step is to take control of the environment. The pet should never be exposed to anything that triggers aggression without a family member being present to control its behavior. Aggressive barking and lunging at unfamiliar people or passersby through windows, doors, at the fence line, or in any other situation must not be permitted. A safe, nonreactive distance must be maintained when on lead. The owner can close drapes, move furniture in front of windows, close doors, close off parts of the home with baby gates, cover windows with contact paper, or use a motion-activated device (spray, alarm) to keep the pet away from targeted areas. The pet should not be allowed in the yard unless it is wearing a head halter or a no-pull harness attached to a leash held by an adult. Electric fences cannot be trusted to keep a territorial dog inside the yard. Dogs that are strongly motivated will run through electric fences. In addition, an electric fence doesn't keep other animals and people out of the yard. Dogs can also associate anything unpleasant in the environment with an emotional or physiologic response, causing aggression to become very dangerous. Owners should be informed of the liability that comes with owning a dog with territorial aggression and should post warning signs at the front door and gates. Dogs should be confined with a solid fence which is tall enough to prevent escape, does not allow

anyone to reach through it, and blocks the sight of the stimuli. Owners should lock all gates, post signs that a dog is present, and make sure that workers and visitors stay out of the yard when the dog is outdoors. If there is any chance someone could make contact with the pet in the fenced yard, the family may need to allow the pet in the yard only on a leash.

The owner should use positive reinforcement to teach the dog to come, sit, down, leave it, and watch (see Appendix C, forms C.14, C.15, and C.16, client handouts #13, #25, and #26, printable version available online). When the owner has taught these cues, the dog can be reintroduced into the situations in which the undesirable behavior occurs. The level of the stimuli should be below the dog's threshold. When the dog has mastered these cues in the environment and the owners can call the dog to come, sit, or lie down and focus on the owners with the stimulus present, the owners are ready to move on to counterconditioning. During this type of training, the idea is to condition a new calm, nonaggressive response. This is why it is so important to keep the dog below the physiologic threshold for aggression. Note that at this point someone coming into the yard might still be above the dog's threshold. Setting up controlled greetings, the use of highly valued rewards, and head halter control can be used concurrently to achieve the desired outcome. In many cases, the owner may not be able to remove aggressive territorial behaviors completely but can teach the dog to exhibit appropriate greeting behavior if the owner is around to supervise.

A bark-activated citronella spray collar or ultrasonic sound device may be an effective tool to interrupt the barking that precedes the aggression (only if it does not cause fear) and the desired outcome can be achieved and rewarded. Even if punishment suppresses the behavior it does not train what is desirable. However, harsh corrections with choke collars, pinch collars, and shock collars generally make the problem worse by associating pain with visitors or other animals at home or on walks. Also, the use of punishment may suppress warning behaviors, such as growling and snarling, without actually making the pet less likely to bite. Castration is unlikely to reduce most forms of aggression. See the role of neutering above. In one small study a low-protein diet

Table 20.8 Steps in the management and treatment of canine territorial aggression

Goal	Decrease arousal, increase control
Safety/ environmental changes	Confine to an area where the pet cannot see passersby Block visibility through doors and windows Do not leave the dog where it can display the behavior Confine the pet when unfamiliar people or pets are in the home Keep the dog on a leash and head halter or no-pull harness when outside in the yard, when visitors arrive (if not confined) and during peak barking times in the house until control of barking is achieved Do not use electric fencing to keep the pet in the yard Tall, inescapable solid fencing with locked gates should be installed. "Dog present" signs should be posted Control the distance between the family and unfamiliar people when the pet is on a lead
Behavior modification	All stimuli that might evoke aggression must be identified to determine the focus for desensitization and counterconditioning exercises The amount, intensity, or proximity of the territorial or protection-evoking stimuli that are required to elicit signs of aggression should be established in order to set a subthreshold starting point for behavior modification Teach sit, down, come, leave it, and watch using positive reinforcement techniques only Use desensitization and counterconditioning after control has been established Avoid fear-evoking punishment techniques An ultrasonic device or bark-activated spray collar may be helpful if these interrupt without causing fear
Surgery	Castration or ovariectomy is rarely, if ever, helpful, but will prevent the possibility of the traits being passed on to future generations
Drugs	Selective serotonin reuptake inhibitors (fluoxetine, paroxetine, sertraline) may be helpful in decreasing arousal, impulsivity, and reactivity), especially if triggering stimuli cannot be avoided or if fear or anxiety is intense. Adjunctive medication such as a benzodiazepine, trazodone, or clonidine may be added when visitors are expected. Supplements or diet changes may possibly be helpful in some cases

supplemented with tryptophan was somewhat effective in lowering territorial aggression.¹⁶ If the dog is excessively fearful or anxious or behaviorally abnormal consider concurrent medication (see [Box 20.5](#) and [Table 20.8](#)).

Prevention

Early socialization, puppy socialization classes, obedience training, and adequate exercise and enrichment can help prevent the development of territorial aggression. Young

dogs should not be chained or confined to yards for long periods in situations where they are continuously overstimulated by passing people and dogs. Ongoing obedience training through social maturity (up to 3 years of age) focusing on encouraging proper meeting and greeting behaviors can help ensure that the owner has control of the dog at a time when the problem generally surfaces. For some breeds (such as guard dogs) and individuals that are genetically more territorial, abundant amounts of early socialization and training are imperative and the focus should be on behavioral control.

CASE EXAMPLE

Rufus, a 5-year-old, 40-kg, male neutered German shepherd dog was presented for aggressively barking and lunging at visitors who entered the home. Rufus had not bitten anyone because the owner always kept him on a leash. He did not respond to verbal cues. After the visitor entered, Rufus was banished to the basement or back yard. When the owner was at work, he was confined in the back yard where he spent most of the day lunging and barking at passersby at the fence line. The owners reported that he was generally friendly when he was walked in the neighborhood. When people petted him, he would lean on them and look very relaxed. The physical examination was normal. In the examination room, Rufus was friendly and confident. He did not display any aggression and was not muzzled when examined.

The owner was told to keep Rufus indoors when they were not home in order to keep him from repeatedly practicing the undesirable behavior. In addition, when any visitor or even a delivery person came to the house, Rufus was to be put in another room with the door closed before the visitor entered. Each time he was confined, the radio in the room was turned up and he was given treats and a favored toy. He could be in the yard as long as he was wearing a head halter attached to a leash held by an adult. The owners were also instructed to review positive reinforcement-based obedience training (sit, come, lie on a mat) as well as to teach two

new behaviors, "leave it" (see [Appendix C](#), form C.15, client handout #25, printable version available online) and "relax" (see [Box 7.2](#), client handout #23, printable version available online). In 1 month, Rufus understood "leave it" and was able to sit and come on cue and would go immediately to his room when company arrived at the door. The owners had not achieved relaxation yet. The owners were instructed to begin to practice in the yard with minor distractions while they continued to work on relaxation inside. They were advised to continue confinement when visitors arrived. After 2 months, the owners could easily call Rufus from the fence line when most stimuli went by. His reactions were much less intense. They were able to get Rufus to relax on his mat for about 30 minutes. The owners were then instructed to begin to use the relaxation mat for counterconditioning, by bringing Rufus out from his confinement area on leash and head halter and giving him rewards if he lay calmly on his mat, beginning first with familiar people and then with unfamiliar people. They were also to begin to practice off-leash play and recalls in the back yard. Four months after the appointment, Rufus was off leash in the yard, but only in the yard when supervised. He could be brought out of confinement with leash and head halter after visitors arrived and would relax on the mat and take rewards from both owners and visitors. The owners continued to use the leash and head halter to ensure control and safety whenever visitors arrived.

Predatory aggression

It is a normal instinct in dogs to chase and hunt prey. However, when this behavior is directed toward people and domestic animals, it can be extremely dangerous. Predatory behavior could include any or all of stalking, chasing, catching, biting, killing, and eating and may be socially facilitated and more dangerous in a group (pack). Predatory behaviors may be stimulated by anything that moves, including other animals, joggers, cyclists, playing children, or moving automobiles. The strongly inherent desire of some breeds to herd is an example of breeding and training the animals to stop at the chase portion of the predatory sequence. Auditory stimuli, such as the cries and screams of babies or young children, may elicit a predatory response. Predation is not preceded by threats because during hunting a warning behavior would be counterproductive. Barking and, in some cases growling, may occur during pursuit of prey.

Diagnosis and prognosis

Predatory aggression may be exhibited by dogs of either sex. A moving stimulus is the usual target. The response of the dog is to chase, bite, and potentially kill prey, which are most often smaller than the dog. To some extent chase behaviors (e.g., herding) may be genetically selected predatory behaviors that also have the potential for serious injury. Dogs that show an extremely unwavering focus directed toward the movements or vocalizations of a baby should be suspected and watched very closely. In some dogs, control tools and training might be effective. The behavior may be socially facilitated, as dogs in groups may exhibit intense chasing, attacking, and kill behavior in situations where they may have done little or no chasing on their own.

The prognosis is variable depending on innate genetic factors, the intensity of the response, ability to interrupt the behavior, and the size of the dog. Since this is an instinctive behavior, it is difficult to correct in many cases. While it might be controlled, it has a poor prognosis for resolution. Dogs with predatory aggression toward people or animals will always have to be closely watched and controlled on leash to ensure safety. A head halter might also be particularly useful to take the focus off any potential prey immediately. Muzzling may be required for some dogs.

Management and treatment

For some dogs with predatory aggression problems, the only sure way to prevent the behavior is to keep the animal strictly confined. Walks should only be taken with a head halter, basket muzzle, and leash. Continuous outdoor supervision under full control is obligatory. The owners must understand that, if the dog gets loose, it may cause injury or even death. The yard should be fenced with a tall, secure fence with locked gates. Predatory dogs should not be contained behind electric fences (see territorial and protective aggression, above). Precautionary signs should be posted on the home, property lines, and gates. Desensitization and counterconditioning are likely to be impractical to implement but, with intensive training, some dogs can be effectively controlled, interrupted, and taught to exhibit desirable responses in the presence of the stimulus (response substitution) as long as they remain under supervision (**Box 20.6**). Because this

Box 20.6 Managing predatory aggression

- Identify all stimuli that elicit the behavior
- Prevent exposure or access to any stimuli that elicit the behavior, except during training
- Keep the pet securely confined or under complete owner control
- Carry out obedience training, concentrating on owner control
- Use desensitization and counterconditioning to change the pet's response to prey stimuli
- Owner should use a head halter, leash, and basket muzzle for safety

behavior is instinctual, owners should be informed that management will be lifelong and that the dog will likely never be cured. Disruptive devices (e.g., remote spray collar) or a leash and head halter might be useful training aids. For punishment to be effective, it must be sufficiently aversive to stop the problem and the dog must associate the punishment with the predatory sequence. However, since some dogs will repeatedly attack porcupines and skunks regardless of the consequences, a strong predatory drive may be impractical to override with any remotely humane type of punishment. Therefore owners should be strongly cautioned that, even with aversive techniques such as shock collars or physical punishment, the behavior may persist, while subjecting the pet to undue pain and discomfort. In some situations even more intense behavior may occur with repeated punishment. Anticholinergic drugs and drugs that enhance serotonin transmission might ameliorate predation, although clinical evidence has not been demonstrated.

Prevention

Predatory aggression is difficult to prevent in dogs that have a strong inherent predatory drive. Obedience training is a must for control. Young dogs which display predatory behavior should be identified early and every attempt should be made to habituate, countercondition, or train the dog to ignore the stimuli. They should not be allowed indiscriminately and frequently to engage in predatory behavior directed toward wildlife. Similar attention should be taken to dogs that might be prone to chase and herding.

CASE EXAMPLE

Emma, a 3-year-old, 10-kg, female spayed, mixed-breed dog, was presented for attacking a cat which had recently been adopted by the family. The cat was about one-third the size of Emma. Emma had a history of chasing and killing small wild animals in the back yard. The first attempts to introduce the two pets to each other resulted in Emma immediately rushing to the cat without warning, grabbing it in her mouth, and shaking it. The owners intervened without delay to save the cat. They attempted to reintroduce the two on the following day by carrying the cat into the room with the dog. As soon as Emma saw the cat, she started to stare intensely and lunged, attempting to bite the cat while it was in the owner's arms. Otherwise, Emma was a friendly dog with people and other animals. The examination was within normal limits and Emma was friendly and showed no signs of aggression in the examination room. Because of the history of predatory behavior, the quickness of intense attack behavior, and lack of warning, it was recommended that the owners either place the cat in another home or keep the dog and cat separated by a solid door unless Emma was on a head halter and a leash held by an adult. It was also recommended that the owners work on control behaviors such as watch and relax with positive reinforcement training. The owners elected to rehome the cat.

Pain-induced and irritable aggression

All veterinarians are aware that pain-induced aggression can be exhibited in even the most sociable and docile animals. Any handling that elicits pain or discomfort can lead to this type of aggression. A similar problem is irritable aggression, which refers to medical conditions that might not cause pain but increase irritability and therefore aggression (or retreat) during approach or handling (see [Chapter 6](#)).

Because pain is a subjective assessment, it may be difficult to separate irritable from pain-induced aggression accurately. Handling or the anticipation of handling (approach, reaching) might lead to this type of aggression. This can happen when an individual attempts to manipulate a painful area, even if that manipulation is just patting, grooming, or applying medication. This problem may also occur if a dog's ear is pulled or when its tail is stepped on. The dog's reaction can become conditioned, being exhibited when the dog anticipates that it will be touched. The presence of pain may lower the threshold for the manifestation of other types of aggression, such as fear-related aggression. The use of physical punishment or force to apply treatments such as ear medication can lead to both pain and defensive aggression. Therefore, physical punishment or force should not be used as it may lead to a conditioned fear response, which may manifest itself as aggression during similar types of handling or approach in the future.

Hypothyroid disease-related aggression has been anecdotally reported in dogs^{49,50} and is discussed in [Chapter 6](#). Hypothyroidism may potentially account for a small percentage of aggressive behaviors, occurring even in the absence of lethargy, weight gain, and other characteristic clinical signs of hypothyroidism. However, there are no peer-reviewed prevalence studies to support or refute this. Aggression has been associated with increased thyroglobulin autoantibody concentrations, along with normal thyroxine and thyroid-stimulating hormone concentrations, in dogs.⁵¹ Proposed mechanisms for hypothyroid-related aggression include lowered threshold for aggression due to lethargy and irritability,⁵² impaired transmission of serotonin at the postsynaptic 5-HT_{2A} receptors in the cerebral cortex,⁵³ and increased metabolism of serotonin in the cerebrospinal fluid.⁵⁴ Decreased cerebrospinal fluid 5-hydroxyindoleacetic acid concentrations have been linked to aggression in several species, including dogs.^{55,56}

Unfortunately, there are gaps in the evidence linking canine hypothyroidism with aggression (see [Chapter 6](#)). In contrast to anecdotal reports suggesting an association with abnormal thyroid function, aggression is a common presentation in dogs with normal thyroid concentrations and dogs treated for hypothyroidism seldom become friendlier. Inappropriate or unnecessary supplementation of thyroid hormone may lead to tachycardia, irritability, aggression, nervousness, and weight loss in dogs. In addition, because thyroid hormone is functionally linked to brain dopamine and serotonergic systems, L-thyroxine supplementation, even in euthyroid patients, may affect the same systems involved in canine aggression disorders; therefore, improvement with thyroid supplementation does not confirm that the cause is thyroid-related. In a study of 31 aggressive and nonaggressive dogs, neither of the two groups had thyroid values outside the normal range.⁵⁷ In a second study comparing thyroxine

and thyroid-stimulating hormone in 39 aggressive and non-aggressive dogs, total thyroxine was higher in aggressive dogs, but was not outside the normal range.⁵⁸ Thus, hypothyroid-related aggression is considered rare. In addition, even if a hypothyroid dog is presented for aggression, supplementation will not necessarily improve the behavior.

Diagnosis and prognosis

Dogs with irritable or pain-related aggression act aggressively when they are pushed, pulled, handled, or medicated. The diagnosis may be difficult because dogs may not show gross clinical signs of discomfort or medical disease. Pain-induced or irritable aggression should be considered if the pet has a disease which is known to cause pain or discomfort, mobility or activity has been altered, or the aggression suddenly appears in a dog with no previous aggression problems when being handled, approached, reached for, or moved. A good general rule is to consider how you would feel if you had the same medical condition. Once the dog learns that biting can stop the interaction, it is likely to use aggression when similar situations arise in the future, whether or not the pain is still present. Thus, the situation must be corrected so that routine care such as nail trimming, home dental care, medicating, and grooming can be accomplished without triggering aggression. A therapeutic response trial with pain control medication may aid in confirming the diagnosis.

Management and treatment

Treat the pain and the underlying medical disease, avoid eliciting further pain, change the environment to help manage the dog without pain, and employ desensitization and counterconditioning exercises to increase the dog's tolerance to being handled ([Box 20.7](#)). For example, an arthritic dog may need carpet runners if the floors are tile or wood. Small dogs may need ramps to get on furniture so that owners don't have to pick them up and risk being bitten. In some cases, a body support device might be used to aid a dog with mobility issues.

Prevention

The best way to prevent pain-induced aggression is to handle the dog in such a way that pain does not occur or is minimized (see [Chapters 4 and 23](#)). In addition, it is important to manage pain appropriately and for sufficient duration (see [Chapter 6](#)). Handling exercises that are performed during puppyhood may help increase the individual's tolerance to being handled when it is experiencing pain. Although it is not possible to anticipate the effects of all stimuli, the

Box 20.7 Pain-induced and irritable aggression

- Eliminate, reduce, or control the pain, illness, or disease
- Adjust the treatment approach so it is more tolerable and causes less pain
- Be patient and gentle when handling the dog and consider muzzling for protection
- Management, e.g. head halter or muzzle to safely and calmly treat
- Desensitization and counterconditioning to accustom the dog gradually to handling the sore area
- Avoid any type of punishment

dog that is trained to be lifted, have its nails trimmed, teeth brushed, and anal sacs expressed may be more likely to tolerate handling when it is in pain. At puppy appointments, the veterinarian should inform owners regarding which medical diseases their dog's breed is predisposed to, and the type of manipulation and handling that the dog might require over time. For example, if the family has an English bulldog puppy, they should be instructed to handle the dog's ears, facial folds, and tail fold daily while giving the dog treats.

CASE EXAMPLE

Babe was a 5-year-old, 40-kg, female spayed Labrador retriever with chronic otitis externa. Over the past year she had progressively become more and more irritable, running away and growling when the owner tried to clean or medicate her ears. Two days before, she had bitten the owner who had lifted Babe's ear to instill medication. Babe's physical examination was within normal limits, with the exception of previously diagnosed otitis externa. Recommendations were made to address the problem both by visiting a dermatologist for further evaluation of the recurrent ear problem and with behavioral modification techniques for handling the ears. In the interim the topical treatments were replaced with systemic therapy (antibiotics and corticosteroids) until the ears were no longer painful and topical therapies could be resumed. The owner was counseled to pay closer attention to the ears so that cleaning and treatment were begun before the problem reached a painful stage. She was told to say "hold still" in a happy tone and give a meat reward many times each day. Between treatments, she was instructed to touch the ears frequently in a very gentle manner, and say "hold still" in a very happy tone as she gave the food reward. Eventually, "hold still" became a secondary reinforcer that could be used to reduce the pet's apprehension during ear treatments. The handling exercises gradually changed from gentle handling to handling that more closely approximated actual ear treatments until the owner was able to treat the ears with no problem.

Play aggression

Play aggression is a normal behavior in young dogs that needs to be managed because of the potential danger to family members and other pets, and because it can be downright annoying when the pet is out of control. A very large portion of canine play involves aggressive behaviors, such as growling, biting, bumping, and attacking. If the dog is rowdy, persistent, or bites without inhibition, it becomes a problem for the family and visitors. Uncontrolled play can pose a danger to young children and adults with fragile skin or who could be knocked over. While play can be vigorous and physical, young pups will usually learn at an early age that hard bites and overexuberant play with littermates causes play to stop. The same rules must be taught when the puppy is playing with people. Puppies with insufficient training, exercise, and mental stimulation especially in breeds with high "energy" are the most likely to display this problem.

Diagnosis and prognosis

Play aggression is typically seen in puppies and young dogs and is accompanied by playful postures and behaviors. A classic play-soliciting behavior is the *play bow* (Figure 20.3). The dog may quickly dart forward and back, barking, and thrusting its muzzle toward the target. Play attacks can be



Figure 20.3 The play bow.

spontaneous with bites that might be hard enough to injure. Mouthing and biting that achieve a goal of soliciting play are positively reinforced and will continue.

Prolonged, deep-tone growling associated with staring and stiff body postures indicates that the behavior is more serious than simple play aggression. Inconsistent owner responses, including punishment, can lead to a progression from play to fear and conflict. While play attacks can be spontaneous and disconcerting for the family ("He viciously attacks for no reason and draws blood with his sharp teeth"), most other types of aggression occur in response to specific stimuli that are provoking to the dog. The prognosis is good for play aggression with proper treatment and early intervention.⁵⁹

Management and treatment

Play aggression can be effectively managed with exercise, obedience training, and behavior modification (Table 20.9). The more exercise the puppy receives, the less energy it will have to expend on rowdy behavior. Long walks, play dates with other dogs, and play with toys should be provided several times daily. Puppies can begin to learn obedience commands as early as 7–8 weeks of age, so training should begin as soon as the puppy is brought home. The puppy should be enrolled in a puppy class as close to 8 weeks of age as possible, and classes continued through adolescence. This will create a good foundation for controlling the dog's behavior and understanding normal behavior and canine communication. Owners should play with toys which distance them from the dog, such as balls and plush toys. Tug games can be a good outlet for interactive play as long as they do not progress to body contact and out-of-control behavior. If the puppy shows any aggression during play with tug toys, the owners should cease this type of play until they can train the pet to drop on cue or play without biting. Owners should never tease with their hands. If the puppy's mouth ever contacts the owner's skin, even if it is unintentional, play should stop immediately. The owner should briskly but calmly turn and walk away. Most puppies follow the owner. That gives the owner an opportunity to ask the puppy to sit, and then resume play with games that avoid human contact (e.g., fetch, chase, train for treats). If

Table 20.9 Steps in the management of canine play aggression

Goal	Shape appropriate play behavior
Satisfy the pet's needs	Introduce a daily schedule incorporating sessions of vigorous exercise and play Choose the type and amount of play that meets the needs of the individual and breed Provide interactive toys for mental stimulation Periodically rotate toys in and out of the dog's environment to keep its interest high Feed the pet meals out of food-dispensing toys
Training and physical control	Teach basic obedience with positive reinforcement methods Enroll in socialization and training classes as early as 8 weeks of age. Enroll in a second class before 1 year of age Look for and reinforce desirable behaviors Avoid reinforcing undesirable behaviors Use a head halter if needed for control
Promote owner leadership and control	Provide structure and consistency Begin "sit" before all interactions in puppyhood
Avoid	Rough play, play that involves grabbing hands and feet Wearing gloves and allowing the pet to bite hard Physical corrections such as hitting, thumping the nose, scruff shakes, ramming a fist into the mouth, alpha rollovers, or other forms of physical punishment
Play biting	Wear out the pet with vigorous exercise prior to play sessions Stop play and immediately turn or walk away from the puppy when it play bites and resume when it ceases If necessary, correct play biting by using a quick, short, startling verbal reprimand followed by redirecting the pup's attention to other types of play Use toys and games to channel the puppy's energy in a positive direction
Interruptions and distractions	A sharp "no!," a sharp or novel noise, an air spray or a citronella spray, may be helpful on occasion to interrupt the behavior as long as it does not cause fear Aversive techniques should be avoided

turning or walking away is not effective, the owner can use a sharp noise or verbal cue to interrupt the puppy, but not scare it. Then, as soon as the puppy will calmly sit, play can resume. Some puppies need a short time out by calmly placing the puppy in a separate room for about a minute or until the dog is calm. The puppy should learn to sit for all interactions, prior to and throughout play and before affection, walks, or food. This sets up a paradigm of calm behavior before and during each interaction.

The environment should be enriched by providing a variety of toys. Toys should be kept novel by providing the puppy with only a few of its toys at any one time. The puppy should eat some or even all meals out of food toys. This will keep the puppy occupied and expend energy. Hitting the puppy on the nose, squeezing the gums against the teeth, scruff shakes, alpha rollovers, bull horns, or other forms of harsh or physical punishment should be discouraged as they are unlikely to be successful, may increase the intensity of the behavior (through inadvertent reinforcement), and may lead to other problems such as handshyness, fear of noises, conflict-related aggression, and fear-related aggression.

Prevention

Play aggression can be effectively prevented by providing adequate exercise, mental stimulation, appropriate socialization, early obedience training, and avoidance of rough play and harsh punishments. See [Chapter 4](#) and [Appendix C](#), form C.6, client handout #20, printable version available online, for more information on dealing with puppy play biting and C17, handout 7 teaching fetch and drop.

CASE EXAMPLE

Simon, a 4-month-old, 10-kg, male Rottweiler, presented for biting his owners. Both of the owners spent long hours at work. Simon's only opportunity to exercise was when he was let out into the back yard. The husband played roughly with Simon by using his hands to push Simon's head around and wrestle on the floor. Simon would respond by biting, interspersed with bouncy, relaxed behavior and play bows. When Simon did this, the owner would smack him lightly across the nose. In the evening, the puppy would come up to the owners and bark, lunge, and nip at any available body part in an attempt to solicit play. Attempts at verbal and physical discipline only seemed to aggravate the situation. The physical examination was within normal limits. During the appointment, Simon was friendly, confident, and interactive. He bounced around the room biting at the legs of the veterinarian and technician. His bites were inhibited and quick. His body language was relaxed. Puppy training and socialization classes were recommended. In addition, the owners were to walk him or play fetch twice daily for 20–30 minutes, discontinue all rough play and physical punishment, ask him to sit for all interaction, feed him meals out of food toys, and rotate his toys. Any attempts at nipping and biting were to be treated by ignoring the puppy or walking away until he calmed down. The owners were not happy with what they considered a slow rate of progress, but were advised to persevere in their efforts and a head halter was incorporated into the training regime. The owners were instructed to use the head halter with leash at times when play aggression might arise to be able to get Simon to calm, focus, and close his mouth should he begin to bite. After 3 more weeks they were happy with the results. They declined feeding Simon out of food toys due to the mess created in the house when the food fell out, but had followed all other recommendations ([Table 20.9](#)).

Dominance-related aggression

Dominance-related aggression is arguably the most misdiagnosed and overdiagnosed type of canine aggression. While it was previously regarded as a common disorder, many behaviorists question whether this is an appropriate description of the underlying motivation for aggression toward family members. Some even question whether true dominant-submissive relationships exist between humans and canids. Many aggression problems that once would have been designated as dominance-related aggression are now being diagnosed as resource guarding, learned, conflict-induced, and impulse dyscontrol^{36,40–42} (see www.dogwelfare-campaign.org). However, while it is a rare case that might meet the criteria formerly used to diagnose dominance-related aggression, it is a diagnostic term that some behaviorists continue to use to describe aggression that heightens in social situations where another member of the group does not defer (human or dog). The critical issue for treatment and prognosis is whether the behavior is normal but undesirable or abnormal / pathological (i.e. anxiety, out of context, reactivity, impulsivity).

Diagnosis and prognosis

Dominance-related aggression is diagnosed when historical information or direct observation of pet-owner interactions reveals a consistent pattern of owner-directed aggression in situations where the dog's control of resources, including physical possessions (e.g., toys, food), space (location), and owner attention, along with perceived social position, is challenged. The dog may attempt to control the movements of family members by pushing, grasping with the mouth, blocking their paths, or aggression. The condition has three important elements: (1) confident temperament; (2) assertive signaling; and (3) aggressive behavior directed toward social group members in the absence of fear.

Evaluation of body postures and social behaviors of dogs is not always straightforward because the owner's response to undesirable behavior is often an inconsistent mix of punishment and inadvertent rewards, while desirable behaviors are insufficiently and irregularly rewarded (see [the role of learning](#), earlier in this chapter). Social behaviors may also be reinforced in out-of-context situations so that they lose their true meaning. Even if the present body language is one of confidence, the initial responses may have arisen out of fear. When the behavior is successful at achieving the dog's goals, the behaviors may become increasingly more confident. Therefore the overall temperament of the individual is very important. Dogs that display owner-directed aggression, but also fear and anxiety, are not sufficiently confident or assertive to be consistent with a diagnosis of dominance-related aggression. Pushy behavior should not be confused with assertiveness. They are most often attention-seeking behaviors which have been rewarded by the owner. Dogs are opportunists and quickly learn which behaviors achieve their goals. For example, a dog that paws the owner until petted has learned that this behavior will result in petting. Therefore even with a diagnosis of dominance aggression, fear and learning are likely contributing factors.

This diagnosis may be confused with conflict-related aggression, which has a component of fear and anxiety. Dogs with conflict-related aggression often appear to be impulsive and respond excessively to relatively benign stimuli. The problem may also have a component of impulse dyscontrol related to alterations in serotonin levels or turnover, as reported in some English cocker spaniels and English Springer spaniels.^{55,60,61} In fact, while differentiation from conflict aggression may be difficult, the same treatment approach is utilized for both and they may arguably be one and the same.

Harsh corrections or attempts to punish the behavior add to conflict and fear. Some forms of handling, especially those that are sudden, unfamiliar, or cause discomfort (e.g., physical punishment, muzzle grasps, pinning, grabbing the collar) and even saying "no" can lead to defensive responses that are often "misdiagnosed" as dominance challenges. Owners should be advised not to stand up to the dog during an aggressive display as this will increase aggression.¹³

The prognosis, as with most types of aggression, depends on the breed, age of onset, duration of the problem, sex of the dog, temperament, familial history (if available), degree of danger to family members, and the ability of the family to cope with the pet. Management or improved control might be achieved in 2–3 months, but lifelong management will be necessary. If stimuli that incite aggression cannot be reliably identified, then safe improvement may not be possible. In dogs with impulse dyscontrol (i.e., rapid, intense responses to relatively benign stimuli), the prognosis may be more guarded unless all stimuli can be identified and prevented and drug therapy with selective serotonin reuptake inhibitors effectively reduces the impulsivity (Table 20.10).

Table 20.10 Treatment of dominance-related aggression*

Goal	Teach the pet to defer to family members and not challenge in competitive situations
Safety	Avoid interactions which elicit aggression Separate from children and family members who are at risk Do not confront the aggressive dog Train to wear muzzle for safety and head halter for safe control
Behavior modification	SIT (structure, consistency, predictability) for all interactions All interactions should be antecedent-response-consequence (reward) interactions Observe for and reward desirable behaviors (settled, deference) Use rewards to train behaviors that allow the owner to handle and move the dog without aggression Discontinue all positive punishment
Environmental changes	Restrict access to resources or areas in which the dog has previously displayed aggression
Medication	Selective serotonin reuptake inhibitors (e.g. fluoxetine, paroxetine, sertraline, fluvoxamine, citalopram) may be helpful in decreasing arousal, impulsivity, and reactivity

*Also applicable to conflict-related aggression.

Management and treatment

Whether the aggression is related to dominance or conflict, the treatment approach utilized for both is to prevent undesirable and teach what is desirable. All stimuli which trigger aggression should be avoided. The dog should be put on a SIT (learn to earn) protocol (see [Appendix C](#), form C.14, client handout #13, printable version available online). Situations where aggression has previously been exhibited must be avoided; owner behavior should be structured when they interact with the dog. There should be no direct interactions with children and the owner should remove all items which were previously guarded. The owners should teach behaviors which allow them to move the dog and avoid confrontation. For example, if the dog generally lies on the landing and growls when people approach preventing them from getting upstairs, that area should be blocked off, dog beds should be placed in other areas of the house and the dog should be taught to go to its bed. If the dog guards bones, they should be made unavailable to the dog and the dog should be taught "Leave it". The owners should use the antecedent–response–consequence system for all interactions with the dog. In other words, they can only interact with the dog predictably and consistently to be able to teach the dog those behaviors that the owner wants the dog to repeat (i.e., learn to earn, predictable consequences). This can be a huge change for owners who are used to lavishing attention on their dogs in an unstructured and inconsistent manner. If the dog is impulsive or behaviorally abnormal, consider use of concurrent medication (see [Box 20.5](#) and [Table 20.10](#)).

Prevention

From the time the dog is obtained, the owner's responses to the dog should be calm, consistent, and structured. By training the dog to sit before it gets anything it wants or needs (e.g., attention, play, walks, treats, food), the dog learns that the owner controls all resources and that responding to obedience training and physical handling leads to rewards. Socialization should begin around 8 weeks of age. Identifying dominance challenges as soon as they emerge and dealing with them promptly and effectively is essential.

CASE EXAMPLE

William, a 16-month-old, 25-kg, male neutered Old English sheepdog, was referred for aggression toward the husband of the young couple that owned him. The dog frequently growled and snapped at the husband when he grabbed William's collar to pull him away from rubbish. The garbage was housed in a plastic garbage can with a lid. When the husband was on the floor watching television, William would occasionally stand over him, stare, and growl. He would block the husband's access to certain rooms of the house. The dog's personality was described as "confident and independent." The physical examination was within normal limits. William didn't have to be muzzled during the examination by the veterinarian. He didn't show any fear when the veterinarian interacted with him. The owners were given the following recommendations:

1. Safety:
 - (a) Do not push/pull/reach for the dog.
 - (b) Feed the dog in a safe, quiet place.
 - (c) Do not lie on the floor with the dog.
 - (d) Do not allow the dog on the furniture.

CASE EXAMPLE—cont'd

2. Behavior modification:
 - (a) Teach the dog "Off," "Go to your bed," "Leave it," and "Move" (away from doorways and hallways) on cue.
 - (b) Only interact with him after he has been obedient.
 - (c) Do not use any physical punishment.

3. Management:

- (a) Keep the garbage under the counter in a locked cabinet.
 - (b) Feed the dog out of the kitchen and on a schedule.

All training was to be positive reinforcement training. After 1 month, the owners reported that William was able to move when told to do so and was responding well to eating in a different area. He had not shown any aggression, but the owners were avoiding many previously arousing situations. The owners were instructed to continue with the current plan. After 6 months, the owners reported a recurrence of body blocking and aggression on the couch. After a phone interview, it was discovered that the owners had become complacent and had started to hug William without warning, let him up on the furniture, and pull him by his collar. The owners were reminded that this plan is a lifetime plan and were instructed to go back to the original plan. After 7 months, William was again doing well with no incidents of aggression.

Maternal aggression

Maternal aggression refers to aggressive behavior directed toward people or other animals that approach the bitch with her puppies. All mothers have protective instincts concerning their offspring. The intensity varies between individuals, with some exhibiting only mild growling and threatening, while others may attack and injure without warning. Bitches that experience pseudocyesis (false pregnancy) may also display maternal aggression despite the lack of puppies. The well-trained and socialized bitch is most likely to allow her puppies to be handled, especially by trusted family members.

Diagnosis and prognosis

The diagnosis is made when a newly whelped bitch or one with pseudocyesis barks, growls, or attempts to bite humans or other animals that approach the puppies, puppy surrogates (e.g., toys), or nest area. The prognosis is good as there is usually spontaneous remission as the puppies mature or are weaned. Behavior modification can be used if the puppies need to be handled while the mother is still very protective. There is also some risk that the behavior will persist once learned or that the problem will recur with subsequent litters.

Management and treatment

Gentle, positive handling by trusted family members is the best way to allay apprehension. It is best to minimize handling of the puppies during the first few days if the bitch tends to be most protective. Since the problem usually is self-limiting, avoidance may be the safest and most practical strategy. Muzzling the bitch or separating her from her puppies may be necessary before handling the puppies ([Figure 20.1](#)). If safety can be ensured, desensitization and counterconditioning can reduce problems for future pregnancies ([Table 20.11](#)).

Table 20.11 Steps in the management of canine maternal aggression

Prebirth preparation	Provide adequate socialization, training, and handling, including in and around the nest area. Begin in puppyhood if the bitch is intended for breeding
	Discourage excessive territorial displays
	Address any behavior issues that involve guarding behavior
	Do not use physical punishment
Control the environment	Provide a quiet, low-stress environment with a door that can be secured when visitors are in the home
	Avoid household changes and stressful events (e.g., parties) that might be upsetting for the mother
	Although it is behaviorally healthy for the puppies to have exposure and handling by a variety of people, interactions with visitors should be avoided in cases of maternal aggression
	Avoid eliciting the aggression by minimizing approach and handling of puppies unless necessary for socialization or medical treatment
Safety	Use a leash and head halter, or basket muzzle as needed
Take control of the mother	Review obedience training using reward training
Desensitization and counterconditioning	Use controlled conditioning sessions to teach the pet to be comfortable with people approaching her

Prevention

The best way to prevent maternal aggression is to have bitches ovariectomized (spayed). This prevents maternal aggression as well as that resulting from pseudocyesis. In breeding animals, extensive socialization, handling, and reward-based training starting at an early age are the best ways to minimize the risks of maternal aggression.

Redirected aggression

Redirected aggression occurs when aggressive behavior is directed to a person or object that is not the stimulus for the aggressive response. Redirected aggression arises as a result of the frustration or interruption of other forms of aggression or arousal. For example, dogs showing aggression toward other dogs may turn and bite the owner or the leash when they are restrained from approaching the other dog. The primary aggression may be territorial, protective, or fear-related aggression; the secondary aggression is redirected. Aggression might also be redirected toward another family dog, such as when one dog exhibits territorial aggression through a window toward a stranger or dog walking across the property, and the second family dog approaches during the heightened arousal and is attacked.

Diagnosis and prognosis

In redirected aggression, the diagnosis is usually not difficult if the victim is not the primary target. The prognosis is good for cases in which there have been few incidents, bites have been inhibited, and the underlying cause of the aggressive arousal can be identified. Ultimately, the prognosis depends on the ability to manage or treat the primary aggression. Prognosis is generally fair to poor for dogs that manifest an exceptionally high level of aggressive arousal, the stimulus for aggression cannot be identified or access cannot be prevented, the aggression is frequent, or the target of the redirected aggression (person or other pet) is unable to avoid interactions safely until the pet settles.

Management and treatment

If the primary cause of aggression is diagnosed and treated, the redirected aggression should resolve, unless the relationship between the pets or the pet and owner has changed due to the way the owner responded to the aggression. While working to resolve or control the primary cause, the owner should be instructed to avoid situations where the dog has redirected previously and to avoid physical contact with the pet during aggression or while aroused. Verbal (reward-trained) commands, e.g. watch, leave it, go to your mat should be used to remove and calm the pet before interacting while head halters and muzzles can be used to ensure safety. If fear or anxiety is excessive concurrent drugs may be necessary (Table 20.12).

CASE EXAMPLE

Helga, a 2-year-old intact female Rottweiler, was presented for acting aggressively when visitors were present since giving birth to six healthy puppies 3 weeks earlier. Helga showed mild signs of agitation when the doorbell rang, then growled and barked when she saw the visitor. Prior to this she had been friendly to visitors and never exhibited any aggression. This was her first litter. The physical examination was within normal limits. The owners were told to keep the environment as quiet as possible and limit the number of visitors. Desensitization and counterconditioning were recommended to change the response to the doorbell. First, the doorbell was muffled until it was barely audible and elicited no aggressive arousal from the

pet. Then, the owners would ring the bell and give Helga a small chunk of canned dog food. The exercise was repeated until the dog showed signs of happily anticipating food whenever the bell was rung. Gradually, the loudness of the bell was increased. The next step was to have friends quietly visit in an area of the home that was farthest from the dog and her puppies. During the visit, a family member would stay with Helga and give her small portions of canned food and treats every time she was alerted by visitors' voices at the other end of the house but did not act aggressively. Visitors were not allowed to approach Helga or her puppies.

Table 20.12 The management of canine redirected aggression

Goal	• Diagnose primary aggression problem and treat accordingly
Safety	• Identify stimuli and situations that trigger aggression • Prevent exposure to stimuli by avoiding situations that elicit aggressive arousal • Avoid physical contact with the pet when it is aroused
Behavior modification	• Diagnose primary cause of aggressive response and treat accordingly
Training, calming, and controlling the pet	• Teach the owner control tools to gain control without reaching for the dog • Use a head halter, no-pull harness, and muzzle if the stimulus cannot be avoided before control is achieved
Drug therapy	• Depends on underlying cause – anxiolytic drugs or selective serotonin reuptake inhibitors (fluoxetine, paroxetine, sertraline) may be a consideration if indicated for the primary cause of aggression

Prevention

The best ways to prevent redirected aggression are to socialize the pet adequately, establish control through early, positive-reinforcement obedience training, and to treat any type of aggression as soon as it appears. Owners should be cautioned not to intervene physically in aggressive situations. Good handling and training skills should allow the owner to control the dog safely before an aggressive episode occurs. In cases of short duration, situations that lead to high arousal states might be improved with desensitization and counterconditioning.

CASE EXAMPLE

Samson, a 35-kg, male neutered Doberman pinscher, was presented for aggression toward the male owner. The dog spent each day in a fenced back yard while the owners were at work. Their home was on a corner lot and the dog spent most of the day barking at various noises and movements in the neighborhood. He charged the fence line and lunged aggressively at most of the passersby just outside the fence. One day, the husband was talking to a friend who was standing on the other side of the fence when the dog charged out of the house, ran to the fence, and aggressively lunged toward the neighbor. The owner reached for the dog's collar and the dog turned and bit the owner's wrist, causing two deep lacerations. Prior to this incident, the pet had no history of exhibiting aggression toward either of the owners. The aggression was territorial and the stimulus was the visitor. However, when the attack was thwarted, the pet's aggression was redirected to the owner. Because territorial aggression was the underlying cause, the owners were given a treatment plan for territorial aggression. They were also told never to reach for Samson when he was aroused or deliberately put him in a situation which historically had resulted in aggression until he was under good control. Instead, they were told to keep him on a head halter and leash when he might be exposed to arousing situations. The treatment plan included obedience training, a 'learn to earn' protocol, desensitization and counterconditioning. A decrease in territorial aggression was noted within 2 weeks, and within 6 months the territorial aggressive displays could be controlled or minimized in the owner's presence. The dog did not show redirected aggression again.

Intraspecific miscommunication

Some aggression between dogs is due to "a failure to communicate." This is most likely to arise in dogs that have not had sufficient socialization to a variety of other dogs. They may be dogs that were weaned early or hand-raised with little or no exposure to other dogs through the balance of the socialization period. When one dog's intentions cannot be gauged by another, the options are avoidance or aggression, especially when appeasing behaviors and postures cannot be effectively communicated. Health issues may affect a dog's ability to respond or react appropriately to another dog's signals or cues. The problem may be further compounded by the differences in morphology between breeds. Facial expressions may be hidden under loose skin or distorted by alterations to facial structure in brachycephalic breeds. Eyes may be small, covered by hair and deeply inset, or large and prominent. Alterations in tail structure and ear carriage also affect important signals of communication, and shortened legs or dramatic disparities in height may make reading of body postures problematic. It is also possible that sensory ability is compromised as the size, shape, and placement of eyes, ears, and nose are altered by breeding. In one study comparing the effects of selective breeding on visual signaling of various breeds, Siberian huskies were found to have a complete repertoire of signals in comparison to the wolf, German shepherd dogs about one-half, and Norfolk terriers, Cavalier King Charles spaniels, French bulldogs, and Shetland sheepdogs had the smallest repertoire and displayed more juvenile behaviors, such as muzzle licking and looking away. In fact, the Cavaliers' only signals appeared to be to "push" another dog away and growl.^{62,63}

Prevention, management, and treatment

Early socialization with a variety of breeds, especially in dogs that have been removed from their mother or littermates at an early age, may aid in the prevention of communication problems; however, once problems arise, teaching dogs communication skills with other dogs may be impractical, although gradual introduction and desensitization and counterconditioning to new dogs, perhaps with the aid of a head halter, might help to develop stable relationships between compatible individuals.

Interdog aggression between household dogs

Dogs can be aggressive toward other dogs within the same household for the same reasons that they exhibit aggression toward people. Similar management and treatment programs are used to avoid problems, gain control through positive training and condition desirable behavior. Physical devices (muzzles, leashes, head halters), desensitization, and counterconditioning are important tools. Aggression toward other dogs might be fear-related (e.g., due to inadequate socialization or unpleasant previous experience), territorial (e.g., a new addition to the family), protective, resource guarding, redirected, miscommunication, or pathophysiological, and these are discussed under these headings in the text. Within a household, behaviorally appropriate dogs generally work out a system for coexistence with a minimum of

injury. However, with some forms of aggression and when there is a size or strength disparity between dogs, injuries or death may occur.

Most often interdog aggression in the household involves same-sex pairs, most frequently females.⁶⁴ Younger dogs, dogs which are new to the household, or dogs that have been rehomed are most likely to start fights.^{64,65}

Situations in which fights are most likely to occur are usually competitive in nature (food, toys, resting area, owner attention), ones in which there is high arousal or excitement (greetings, territorial barking, running through the home, play, exiting through a door into the yard), or passing through narrow doorways or tight spaces.

Although it is easy to look at interdog aggression under the umbrella of dominance, that assumption can lead to inaccuracies in diagnosis and treatment. Current research does not support the idea that dogs form stable hierarchies in the wild or in the home. However, in a household where there is social asymmetry between dogs, with one dog successfully controlling resources or social interactions and the other dog deferring, using postures and actions to communicate, there may indeed be a form of hierarchy (between individuals) that allows for social harmony with little or no observable threats or confrontations. On the other hand, most dogs live together without a structured hierarchy and any competition over resources is resolved through a combination of factors, including resource-holding potential (the relative value of the resource to each individual), which dog controls the resource at any given time, socialization or temperament of the dog, and previous consequences. Deference and the relinquishment of resources are important in avoiding aggressive encounters. Problems arise when dogs of nearly equal social status and similar resource-holding potential for a particular resource inhabit the same house. In situations like this, both dogs may be behaviorally appropriate, yet fights still occur. Genetics, health, and inadequate socialization during early sensitive periods of development may lead to poor intraspecific communication skills which can also contribute to aggression.

Owners that interfere with normal dog interactions can cause or contribute to fighting. For example if dog A has a bone and dog B approaches, dog A may signal dog B by posturing and growling to stay away, and dog B may retreat. If the owner decides this is unfair, she may reprimand dog A and give dog B the bone. If this persists, dog A may become increasingly more anxious and increasingly more intense as dog B approaches, crossing the line between normal and abnormal behavior. In fact, the dog world is inherently unfair in that some degree of social asymmetry is needed to help establish stable relationships. Although there are times when owners should absolutely intervene, there are times when this is contraindicated.

Diagnosis and prognosis

The classical approach to treating interdog aggression within the family by choosing an individual to promote to a higher rank can be problematic. It is likely that families have already intervened in the relationship, so that social behaviors occur out of context, making interpretation difficult. It is often impossible to determine which

dog to support and which should learn to defer. There may be, in fact, no higher-ranking individual or, by the time that the veterinarian sees the case, the original social structure has been modified by learning and owner intervention. Presumably, had social structure and communication been healthy, aggression would not be an issue and problems would have quickly been resolved. In cases where older dogs are being challenged by younger dogs, there could be an aspect of competition for rank; however, the older dog may have health or mobility issues leading to irritability or affecting its ability to communicate. The most important question in any aggressive interaction is which dog, if any, is acting appropriately so that the focus of treatment can be on reinforcing what is appropriate and preventing or changing the response of the dog behaving inappropriately or preventing the interactions that lead to aggression.

If status or dominance is not important or is unable to be determined, how should the veterinarian approach these cases? First, the underlying cause of aggression should be identified. If the dog is guarding the owner as a resource, the diagnosis is resource guarding. If the dog is fearful, the diagnosis would be fear-related aggression. If the dog is highly aroused (e.g., territorial aggression), interrupted, and attacks a nearby family dog, the problem may be redirected aggression. If the dog's response is socially inappropriate, the diagnosis would be social aggression and possibly pathological. Once the motivation is clear, the primary disorder can be treated. The body language displayed by each dog involved in the problem will depend on the underlying motivation for the aggression and the learning that has occurred. For example, victim dogs, even if they have been acting appropriately (e.g., deferring, avoiding), may be more aggressive and fearful if they continue to be attacked.

The owner should be counseled that the goal is to gain better control of each dog separately and to manage the problem initially (e.g., over 2 months) before the dogs can be reintroduced. Some owners choose not to reintroduce the dogs and instead live with the dogs separated or rehome one of the dogs. If the owners choose to live with the dogs separated, that is a valid option; however, if the owner makes a mistake in management, there is likely to be a dog fight. Thus, the owner should still work on behavior modification and strategies for prevention, focusing on when and where problems are most likely to arise. If incidents involve high arousal potential for injury or abnormal responses, the family should be advised not to allow the dogs to fight it out. In the event that a fight does occur, owners should be instructed how to break up a dog fight safely (Box 20.8). Although physical intervention is often required, in one study 42% of households did not require physical intervention to break up fights.⁶⁴

Spayed females are most likely to be presented to veterinarians for interdog aggression. Fighting between female dogs in the same household is often very intense, bites may be uninhibited, severe injuries may result, and the prognosis is fair to poor. Intact male and female dogs which fight often begin to show this behavior at 1 and 3 years of age respectively. Intermale aggression might be decreased by castration.^{24,66} In female dogs, there does not appear to be any benefit to spaying unless the problem is manifested during estrus or as maternal aggression. The prognosis is

reported to be worse when the younger dog instigates the fight, a human has been bitten, or when the aggression is unpredictable.⁶⁵ For cases in which both dogs are behaviorally appropriate and each trigger for aggression can be identified, the prognosis is fair to good. In situations where the primary cause is fear, the dogs are behaviorally inappropriate, anxious, or not well socialized, the prognosis is fair to poor or variable depending on response to medication.

Box 20.8 Safe options for breaking up a dog fight

Do not allow the dogs to “fight it out” unless unsafe to intervene

Attempt to prevent a fight by using verbal commands (e.g., “go to mat,” “come”) to encourage desirable outcomes (e.g., “let’s go for a walk,” “play time”). A loud verbal “stop” or “no” may help in some situations, but may worsen others

Have tools available in every room and in the back yard to break up fights if verbal commands are ineffective

Some examples of tools (never use hands or body) which can be helpful to break up fights are:

- Compressed air or citronella spray
- Audible or ultrasonic deterrents
- A bucket of water
- Pot lids to crash together
- Baby gate or a peg board cut to size to wedge in between the two dogs and push them apart
- Blanket (small dogs)
- Sofa cushions
- Baby pool filled with water
- Hose connected to outdoor spigot
- Break stick
- Have leashes attached to both dogs at all times (with head halter if possible) to use for separation

Some dogs will never be appropriate for multidog households.

Management and treatment

Interdog aggression can be a challenge to treat. Castration or ovariectomy may help in some cases. The family needs to be sufficiently educated about canine social behavior and committed to behavior modification and household changes (Table 20.13). They should understand that their dogs are not a pack, but instead roommates who might be competitive over particular resources or unable to communicate effectively. In fact, if they were feral, they might not remain together as a group. In some cases the dogs do get along well together in the owner’s absence, indicating that the owner is a resource over which the dogs are fighting or the owner’s actions are in some way contributing to the problem.

The first step of treatment is to eliminate fights by identifying all situations in which aggression might arise and avoiding the triggers or separating the dogs at these times. To determine these, history collection should focus on how the pets behave in all potential competitive and high-arousal situations. If the conflicts are related to specific resources, avoiding these situations entirely may be most practical (e.g., always feed separately; remove food chews and toys that are guarded).

Training should be reviewed so that all dogs will do a very dependable sit, stay, and recall on command. A good recall is exceptionally important because it can be used with an upbeat tone to defuse a potentially aggressive situation by distracting the dog and calling it away from the other dog. In the beginning, the owner should teach the basics to each

Table 20.13 Steps in the management of canine intraspecific aggression between household dogs

Goal	• Control both dogs, treat primary cause of aggression, facilitate desirable social interaction
Neuter	• Neutering males may reduce intermale fighting • Spaying may eliminate hormonally driven interfemale aggression
Safety	• Identify all situations in which the aggression occurs so that the possibility of conflicts and competition can be minimized • If aggression during feeding is an issue, feed the dogs in different parts of the house • Do not allow the dogs to greet visitors or family members excitedly together. Teach them to sit and stay quietly during greetings • Do not allow the dogs to run the fence line aggressively together. Block access to windows where the pets demonstrate territorial aggression • Deny free access to highly desirable objects for which the pets might compete (raw hide, bones) • Use control devices such as leashes, head halters, or muzzles to ensure that no family members or pets are injured • Separate the dogs entirely where necessary, at least at times when aggression might occur. Use separate crates or kennels or house in separate areas of the home • Avoid physical punishment and harsh scoldings. The goal is to make the dogs more relaxed around each other and this is less likely to take place if either dog receives something aversive in the presence of the other
Behavior modification	• The initial goal is for owners to have sufficient control of both dogs when they are at home so that the dogs respond appropriately when the owners are present. Each dog should be trained separately to respond immediately to commands to sit, stay, come, leave it, go to its bed and watch • Both dogs should be on a “sit for all interactions” program • Once the family members have sufficient control of each dog, the dogs can be reintroduced on walks and then in the home • Any acceptable social interaction or behavior should be reinforced with praise and/or food • It is not a matter of who gets rewards first but rather which behaviors need to be shaped and rewarded. Reward appropriate behavior and prevent undesirable behavior. Identify triggers for aggression and either prevent or train and reward alternative desirable behaviors
Medication	Selective serotonin reuptake inhibitors (fluoxetine, paroxetine, sertraline) may be helpful in decreasing arousal, impulsivity, reactivity and where mental health is abnormal (behavioral pathology) See box 20.5

dog separately. Other helpful command responses include: go to your bed, walk on a leash, leave it, and watch. The commands should be taught and used with a friendly tone of voice. A harsh “Leave it” or “Watch me” may actually provoke an attack (see [Appendix A](#) and handouts).

Both dogs should be on a SIT program to add structure to their environment. In one study 89% of owners indicated an improvement when a predictable rewards or nothing in life is free program was implemented.⁶⁴ Since conflict, fear, anxiety, and miscommunication may contribute to the aggression, consistent interactions such as “a settled sit is required for everything of value” reduce conflict by providing rewards only for relaxed behaviors that are incompatible with the undesirable behaviors or emotional states (e.g., aroused, hypervigilant, reactive). This may also serve as a form of structure and counterconditioning as each dog learns the behaviors that successfully gain rewards. Anytime a family member with a dog (or dogs) begins to move about the house, yard, enter/exit the home, or go up/down stairs, the pet(s) should be cued to sit, stay, and wait for a release to follow. Medication is also likely indicated (see below).

When the owner is petting or giving treats, food, or play, one dog may invariably have to be rewarded before another. Recommendations on which dog should receive rewards first might be the behaviorally appropriate dog, the younger dog, the older dog, or the dog to whom it matters most, depending on the situation. Giving priority access to resources to a particular dog has been found to be successful in only 48% of cases. In 67% of cases, improvement was seen if the senior dog was supported.⁶⁴ If the support of one dog is ineffective, it has been suggested that, after 6 weeks, the support program be reversed.⁶⁷ Alternately, it might be possible to consider providing resources separately so that the order in which the dogs are fed, given toys, or greeting might vary for each resource based on its relative value of each resource to each dog. Determining the “natural hierarchy,” who the “alpha dog” should be, and who should get the best, the most, and first resources is fraught with problems. Poor observational skills by the family, interference with normal social signaling, and misinformation regarding dog behavior may cloud the real picture regarding the dogs’ social behavior. Even when it can be determined which dog should be “top dog,” the family may be reluctant to demote a favored older or passive pet, or provide preferred access to resources to a recently acquired, confident, more socially assertive young pet. In all cases, the therapist must take care that inappropriate and inciting behaviors are identified and never reinforced.

That said, the most important consideration is that the family has complete control of all pets (physical and response to commands), the pets are not allowed to be socially assertive to anyone in any situation, there are consistent rules and boundaries within which both pets are required to live, and appropriate social behavior is frequently reinforced. It is much less important to attempt to determine who should get what and in what order. If there is structure in all interactions and desirable behaviors are consistently rewarded, there is less likelihood that the pets will be concerned about which of them has the most control or which gets treats or social attention first.

If and when the owners have sufficient verbal and physical control (e.g. head halter) for safe reintroduction, they might then begin reward training and counterconditioning in those

situations that have not historically led to problems (preferably with physical control of a head halter and one handler per dog). Initial reintroduction might begin on walks. The pets should be closely watched for appropriate social behavior and reinforced with praise and food (unless giving treats is a trigger for aggression). Each time there are any signs of arousal, the dog can be requested to “Leave it” or “Watch” using an upbeat tone. Over many walks, the dogs are walked closer and closer together until the entire walk goes smoothly without the need for distraction or interruption. Then, when the dogs come back into the house, they might hang out together on leashes (with head halter if needed). Resources over which the dogs might fight should be removed. The entire time that the dogs are together, the owner is watching and giving commands and rewards for behaviors that will avoid situations in which fights might arise. Anytime either of the dogs shows signs of arousal that might precede aggression, the owner should call one of the dogs or give a cue to “Leave it” or “Watch” (with the aid of the leash if needed) and have the dog sit, or send it to its bed. This sequence mimics normal disengagement body language of averting the gaze and stepping away. Over time, the dogs should look to the owner for help when they are anxious about interactions. Over time, it might be possible to reward train, desensitize, and countercondition near resources and in the situations where the dogs formerly would fight, although in some cases it might be most prudent simply to avoid the situation, if possible.

Once the dogs are more relaxed and under dependable family control, the conditioning can take place in a variety of controlled situations. In some cases, the family can only hope to have the dogs together with supervision to police the dogs’ actions, and control access to resources.

Punishment or scoldings applied after or during a fight will not change the likelihood of a fight in the future, may worsen the situation, and could lead to redirected aggression to family members. The family should use the tools that are available to break up the dog fight safely and then separate the dogs ([Box 20.8](#)). Medications (initially selective serotonin reuptake inhibitors) and perhaps adjunctive medications (trazodone, clonidine, buspirone, tryptophan, pheromones) that might reduce underlying anxiety or impulsivity (see Chapters 8 and 9) are indicated where one or both dogs is behaviorally inappropriate or the arousal level is high ([Box 20.5](#)). Improvement has been reported in 65% of cases when one or both dogs receive medication, 22% when a head halter was used, and 26% for separation followed by gradual introduction (26%).⁶⁴ In addition, any concurrent medical problems must be identified and treated.

Prevention

Neutering may help to prevent intermale aggression. The owner should begin developing obedience skills in puppyhood, so that all pets are under dependable verbal control. All pets should be well socialized to other dogs throughout life, but especially prior to 14 weeks. Frequent social interactions with peers can help facilitate normal social communication. Taking a puppy away from its littermates and preventing interaction with other canids prior to 6 weeks of age may impede its ability to develop normal communication skills with other dogs.

CASE EXAMPLE

Annie was a 5-year-old, 30-kg, female spayed Dalmatian cross, adopted from the shelter by her owner 6 months previously. Annie was reportedly fearful of thunderstorms and displayed signs of separation anxiety. Annie lived with another female spayed, 7-year-old dog, Riley. The owner reported no behavior problems with Riley regarding other dogs. However, when Riley came near Annie when the owner was petting Annie, especially on storm days, Annie would growl at Riley. At first Riley would leave the room. The owner would then bring her back to be petted. Over the past 2 months, Annie's aggressive displays had become more and more violent. In addition, the warning signals that typically preceded the aggression had disappeared. Riley would now avoid Annie entirely even if she was not near the owner. When a fight did start, Annie received the most injuries. Annie's physical examination was normal. She was very fearful during the examination.

Annie was diagnosed with separation anxiety, thunderstorm phobia, and resource guarding. The aggression toward Riley was a result of the guarding of the owner. She was not guarding because she perceived her safety to be in jeopardy, but because of her anxiety and hyperattachment to the owner. In addition, on storm days, she was under physiologic stress which lowered her threshold for aggression. When Riley would come near, Annie felt threatened. It was explained to the owner that the aggression was about anxiety and not related to rank. Treatment for the separation anxiety and thunderstorm phobia was instituted.

Annie was fitted with a head halter and the owner was instructed to put into effect a SIT program and to teach "Leave it," "Watch," and "Go to a bed" for both dogs. The owner was educated on dog body language. Annie was allowed to be with Riley only when she was on a leash. When Riley approached, if Annie showed any signs of aggression, including tense body or piloerection, she was told to leave it and was sent to her bed to lie down and stay, followed by reinforcement. If she was not aggressive, the owner rewarded her with treats and petting. When the owner couldn't work with the dogs, they were kept separately behind baby gates. The owner walked the dogs together (with a friend holding Riley's leash), progressively over a month getting them closer to each other until they could walk about 1 meter (3 feet) from each other without aggression. Each time that Annie looked as if she might become aroused, the owner told her to "Leave it" and "Watch," then rewarded her with food. After 2 months, the owner was able to control Annie and Riley as long as they were on leashes. Annie rarely showed aggression in these circumstances. The owner was instructed on how to begin to let the dogs interact more closely, but declined to complete this part of the treatment plan because she was unwilling to take any risk that the dogs would fight. She maintained the dogs in this manner, on leashes or separated, for 5 years until Riley was euthanized due to medical reasons.

Other forms of aggression

Pathophysiological aggression

Aggression can be a normal behavior influenced by genetics, learning, and conditioning. Health issues during the prenatal, neonatal, and early stages of development, insufficient socialization, chronic stress, and repeated exposure to situations that cause fear, anxiety, conflict, or frustration may contribute to aggressive behavior. Some forms of aggression are abnormal or pathological. Pathophysiological aggression is aggression that results from underlying physiologic or physical abnormalities. These might include abnormal neurotransmitter/receptor activity, central nervous system (CNS) anatomic abnormalities (genetic, congenital, acquired), neoplasia (CNS tumors), metabolic disease states (hepatic encephalopathy, endocrine disorders), infections (rabies), trauma (CNS injury), and toxins (lead, pesticides, illicit drugs).

There are also a wide range of behavioral pathologies (mental health issues), many that are analogous to human psychiatric disorders. Behavioral disorders that have direct correlates to human disorders have been described, including attention deficit hyperactivity disorder, generalized anxiety disorders, phobias, panic or extreme fear responses,

compulsive disorders, posttraumatic stress disorders, and impulse control disorders but *Diagnostic and Statistical Manual of Mental Disorders*-type diagnostic terminology has yet to be ascribed, except by individual behaviorists such as Patrick Pageat (see [Chapter 22](#)).⁶⁸ Also see [Box 20.5](#).

Neurotransmitter and receptor alterations have been demonstrated or postulated based on response to therapy. Alterations in serotonin and its metabolites have been demonstrated in some forms of aggression,^{60,61,69,70} and altered prolactin levels have been identified with acute and chronic anxiety disorders.⁷¹

On the other hand, some conditions, such as the effects of early deprivation (nutritional, maternal, social, experiential) during the critical stages of early development, ("kennelosis," deprivation syndrome) and cognitive dysfunction in senior pets, are well described as forms of behavioral pathology.

There are not yet any practical or validated diagnostic tests for clinical use. However, positron emission tomography scans, measures of neurotransmitters and their metabolites, genetic testing, and electroencephalogram evaluations might hold some promise in the future. In the interim behavioral diagnostics must focus on clinical signs, and response to therapeutic trials combining management, behavioral therapy, and drug therapy, where indicated.

References

- Bamberger M, Houpt KA. Signalment factors, comorbidity, and trends in behavior diagnoses in dogs: 1644 cases (1991–2001). *J Am Vet Med Assoc* 2006;229:1591–601.
- Centers for Disease Control and Prevention Fact Sheet. Dog Bite Prevention Fact Sheet <http://www.cdc.gov/HomeandRecreationalSafety/Dog-Bites/dogbite-factsheet.html>, 2011.
- Avner JUR, Baker MD. Dog bites in urban children. *Pediatrics* 1991;88:55–7.
- Kaye AE, Belz JM, Kirshner RE. Pediatric dog bite injuries. A 5 year review of the experience at the Children's Hospital in Philadelphia. *Plast Reconstr Surg* 2009;124:551–68.
- Reisner IR, Shofer FS, Nance ML. Behavioral assessment of child-directed aggression. *Inj Prev* 2007;13:348–51.
- Salman MD, Hutchinson J, Ruch-Gallie R, et al. Behavioral reasons for relinquishment of dogs and cats to 12 shelters. *J Appl Anim Welf Sci* 2000;3:93–106.
- Wilson EO. *Sociobiology*. Cambridge Massachusetts: Belknap Press of Harvard University Press; 2000.
- Podberscek AL, Serpell JA. Environmental influences on the expression of aggressive behavior in English Cocker-Spaniels. *Appl Anim Behav Sci* 1998;52:215–27.
- Reisner IR, Houpt KA, Shofer FS. National survey of owner-directed aggression in English Springer Spaniels. *J Am Vet Med Assoc* 2005;227:1594–603.
- Duffy DL, Hsu Y, Serpell JA. Breed differences in canine aggression. *J Appl Anim Behav Sci* 2008;114:441–60.
- Amat M, Manteca X, Mariott VM, et al. Aggressive behavior in the English Cocker Spaniel. *J Vet Behav* 2009;4:111–7.
- Reisner IR, Shofer FS. Effects of gender and parental status on knowledge and attitudes of dog owners regarding dog aggression toward children. *J Am Vet Med Assoc* 2008;233:1412–9.
- Herron M, Shofer F, Reisner I. Survey of the use and outcome of confrontational and non-confrontational training methods in client-owned dogs showing undesirable behaviors. *Appl Anim Behav Sci* 2009;117:47–54.
- Hsu Y, Sun L. Factors associated with aggressive responses in pet dogs. *Appl Anim Behav Sci* 2010;123:108–23.
- Blackwell EJ, Twells C, Seawright A, et al. The relationship between training methods and the occurrence of behaviour problems as reported by owners, in a population of domestic dogs. *J Vet Behav* 2008;3:207–17.
- DeNapoli JS, Dodman NH, Shuster L, et al. Effect of dietary protein content and tryptophan supplementation on dominance aggression, territorial aggression and hyperactivity in dogs. *J Am Vet Med Assoc* 2000;217:504–8.
- Radosta-Huntley L, Shofer F, Reisner IR. Comparison of 42 cases of canine fear-related aggression with structured clinician initiated follow-up and 25 cases with unstructured client initiated follow up. *Appl Anim Behav Sci* 2007;105:330–41.
- Nielson J, Eckstein RA, Hart BL. Effects of castration on problem behaviors in male dogs with reference to age and duration of behavior. *J Am Vet Med Assoc* 1997;211:180–2.
- Hart BL, Eckstein RA. The role of gonadal hormones in the occurrence of objectionable behaviors in dogs and cats. *Appl Anim Behav Sci* 1997;52:331–54.
- Mengoli M, Cozzi A, Chiara M, et al. Survey of possible changes in undesirable behavior after neutering in male dogs. *Proceedings of the 2010 European Behaviour Meeting*. Belgium, ESCE; 2010. 189–93.
- Patronek GJ, Glickman LT, Beck AM, et al. Risk factors for relinquishment of dogs to an animal shelter. *J Am Vet Med Assoc* 1996;209:572–81.
- Stubbs WP, Bloomberg MS, Scruggs SL, et al. Effects of prepubertal gonadectomy on physical and behavioral development in cats. *J Am Vet Med Assoc* 1996;209:1864–71.
- Spain CV, Scarlett JM, Houpt KA. Long-term risks and benefits of early-age gonadectomy in cats. *J Am Vet Med Assoc* 2004;224:372–9.
- Hopkins SG, Schubert TA, Hart BL. Castration of adult male dogs: effects on roaming, aggression, urine marking, and mounting. *J Am Vet Med Assoc* 1976;168:1108–10.
- Nielsen JC, Eckstein RA, Hart BL. Effects of castration on problem behaviors in male dogs with reference to age and duration of behavior. *J Am Vet Med Assoc* 1997;211:180–2.
- Hart BL, Barrett RE. Effects of castration on fighting, roaming, and urine spraying in adult male cats. *J Am Vet Med Assoc* 1973;163:290–2.
- Guy NC, Luescher UA, Dohoo SE, et al. Demographic and aggressive characteristics of dogs in a general veterinary caseload. *Appl Anim Behav Sci* 2001;74:15–28.
- Messam LLM, Kass PH, Chomel BB, et al. The human–canine environment: a risk factor for non-play bites? *Vet J* 2008;177:205–15.
- O'Farrell V, Peachey E. Behavioural effects of ovariohysterectomy on bitches. *J Small Anim Pract* 1990;31:595–8.
- Kim HH, Yeon SC, Houpt KA, et al. Effects of ovariohysterectomy on reactivity in German Shepherd Dogs. *Vet J* 2006;172:154–9.
- Reisner IR. Dominance-related aggression of English Springer Spaniels: a review of 53 cases. *Appl Anim Behav Sci* 1993;37:83–4.
- McCarthy MM, McDonald EH, Brooks PJ, et al. An anxiolytic action of oxytocin is enhanced by estrogen in the mouse. *Physiol Behav* 1997;60:1209–15.
- Kustritz MVR. Determining the optimal age for gonadectomy of dogs and cats. *J Am Vet Med Assoc* 2007;231:1665–75.
- Carlson NR. *Physiology of behavior*. Boston: Pearson; 2007. p. 601–3.
- Voith VL, Borchelt PL. Dominance aggression in dogs. *Comp Contin Educ Pract Vet* 1986;8:36–44.
- Luescher UA, Reisner IR. Canine aggression toward familiar people; a new look at an old problems. *Vet Clin North Am* 2008;38:1107–30.
- Coppinger R, Schneider R. Evolution of working dogs. In: Serpell J, editor. *The domestic dog, its evolution, behavior and interactions with people*. Cambridge, UK: Cambridge University Press; 2005. p. 26.
- Macdonald DW, Carr GM. Variation in dog society: between resource dispersion and social flux. In: Serpell J, editor. *The domestic dog, its evolution, behavior and interactions with people*. Cambridge, UK: Cambridge University Press; 2005. p. 212.
- Van Kerkhove WA. Fresh look at the wolf-pack theory of companion – animal dog social behavior. *J Appl Anim Welf Sci* 2004;7:279–85.
- Bradshaw JW, Blackwell EJ, Casey RA. Dominance in domestic dogs – useful construct or bad habit? *J Vet Behav* 2009;4:135–44.
- Guy NC, Luescher AU, Dohoo SE, et al. Risk factors for dog bites to owners in a general veterinary caseload. *Appl Anim Behav Sci* 2001;74:29–42.
- Guy NC, Luescher AU, Dohoo SE, et al. A case series of biting dogs: characteristics of dogs, their behavior and their victims. *Appl Anim Behav Sci* 2001;74:43–57.
- Denenberg S, Landsberg G, Horwitz D, et al. A comparison of cases referred to behaviorists in three different countries. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. p. 56–62.
- Reisner IR, Erb HN, Houpt KA. Risk factors for behavior-related euthanasia amount dominant-aggressive dogs: 110 cases (1989–1992) *J Am Vet Med Assoc* 1994;205:855–63.
- Leuscher AU, Reisner IR. Canine aggression toward familiar people: A new look at an old problem. *Vet Clin North Am* 2008;38:1107–30.
- Lindsay S. *Handbook of applied dog behavior and training*. Etiology and assessment of behavior problems. vol. 2.

- Ames, IA: Iowa State University Press; 2001. p. 61–201.
47. Godbout M, Frank D. Persistence of puppy behaviors and signs of anxiety during adulthood. *J Vet Behav* 2011;6:92.
 48. Gazzano A, Mariti C, Alvares S, et al. The prevention of undesirable behaviors in dogs: effectiveness of veterinary behaviorists' advice given to puppy owners. *J Vet Behav* 2008;3:125–33.
 49. Beaver BV, Haug LI. Canine behaviors associated with hypothyroidism. *J Am Anim Hosp Assoc* 2003;39:431–4.
 50. Fatjo J. Animal behavior case of the month. *J Am Vet Med Assoc* 2003;223:623–6.
 51. Graham PA, Lundquist RB, Refsal KR, et al. Reported clinical signs in 8317 cases of canine hypothyroidism and 2647 cases of subclinical thyroiditis. Proceedings of BSAVA. Birmingham, UK, 2004. 529.
 52. Feldman EC, Nelson RW. Canine and feline endocrinology and reproduction. Philadelphia PA: W.B. Saunders; 1996. p. 70–111.
 53. Henley WN, Valdic F. Hypothyroid-induced changes in autonomic control have a central serotonergic component. *Am J Physiol* 1997;272:H894–903.
 54. Henley WN, Chen S, Klettner C, et al. Hypothyroidism increases serotonin turnover and sympathetic activity in the adult rat. *Can J Physiol Pharmacol* 1991;69:205–10.
 55. Reisner IR, Mann JJ, Stanley M, et al. Comparison of cerebrospinal fluid monoamine metabolite levels in dominant-aggressive and nonaggressive dogs. *Brain Res* 1996;714:1–2.
 56. Mehlman PT, Higley JD, Faucher I, et al. Low CSF 5-HIAA concentrations and severe aggression and impaired impulse control in nonhuman primates. *Am J Psychiatry* 1994;151:1485–91.
 57. Radosta L, Shofer F, Reisner I. Comparison of thyroid analytes in aggressive and nonaggressive dogs. Proceedings of the AVSAB/ACVB scientific meeting. 2006. 23–25.
 58. Carter G, Scott-Moncrieff JC, Luescher AU. Serum total thyroxine and thyroid stimulating hormone concentrations in dogs with behavior problems. *J Vet Behav* 2009;4:230–6.
 59. Godbout M, Frank D. Excessive mouthing in puppies as a predictor of aggressive behavior in adult dogs. *J Vet Behav* 2011;6:93.
 60. Amat M, Mariotti VM, Le Brech S, et al. Differences in serotonin levels between aggressive English cocker spaniels and aggressive dogs of other breeds. *J Vet Behav* 2010;5:46.
 61. Rosado B, Garcia-Belenguer S, León M. Blood concentrations of serotonin, cortisol and dehydroepiandrosterone in aggressive dogs. *Appl Anim Behav Sci* 2010;123:124–30.
 62. Goodwin D, Bradshaw JWS, Wickens SM. Paedomorphosis affects agonistic visual signals of domestic dogs. *Anim Behav* 1997;53:297–304.
 63. Bradshaw J. Dog sense. New York: Basic Books; 2011. p. 252–76.
 64. Wrubel KM, Moon-Fanelli AA, Maranda LS, et al. Interdog household aggression: 38 cases (2006–2007). *J Am Vet Med Assoc* 2011;238:731–40.
 65. Sherman CK, Reisner IR, Taliaferro L, et al. Characteristics, treatment and outcome of 99 cases of aggression between dogs. *Appl Anim Behav Sci* 1996;47:91–108.
 66. Maarschalkwerweerd RJ, Endenburg N, Kirpensteijn J, et al. Influence of orchiectomy on canine behavior. *Vet Rec* 1997;140:617–9.
 67. Dodman NH, Arrinton D. Animal behavior case of the month. *J Am Vet Med Assoc* 2000;217:1468–72.
 68. Overall KL. Dogs as “natural” models of human psychiatric disorders: assessing validity and understanding mechanism. *Prog Neuropsychopharmacol Biol Psychiatry* 2000;24:727–76.
 69. Reisner IR, Mann JJ, Stanley M, et al. Comparison of cerebrospinal fluid monoamine metabolite levels in dominant-aggressive and non-aggressive dogs. *Brain Res* 1996;714:57–64.
 70. Çakiroglu D, Meral Y, Sancak AA, et al. The relationship between the serum concentrations of serotonin and lipids and aggression in dogs. *Vet Rec* 2007;161:59–61.
 71. Pageat P, Lafont C, Falewee C, et al. An evaluation of serum prolactin in anxious dogs and response to treatment with selegiline or fluoxetine. *Appl Anim Behav Sci* 2007;105:342–50.

Recommended reading

- DeMeester RH, Mills DS, De Keuster T, et al. ESVCE position statement on risk assessment. *J Vet Behav* 2011;6:38–9 (also available at esvce.org)
- Eaton B. Dominance in dogs, Fact or Fiction. Dogwise Publishing; 2012.
- Haug L. Canine aggression toward unfamiliar people and dogs. *Vet Clin North Am Small Anim Pract* 2008;38:1023–41.
- Luescher AU, Reisner IR. Canine aggression toward familiar people: a new look at an old problem. *Vet Clin North Am Small Anim Pract* 2008;38:1107–30.
- Welfare in Dog Training – dogwelfarecampaign.org

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Feline aggression

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Cats prefer not to fight. They may use a combination of visual and audible communication displays to avoid aggressive and physical confrontations, but there are many reasons why the systems may fail, resulting in aggressive encounters and even serious injuries. The social society of the cat is based on groups of related females when cooperative living is most advantageous but many feline behaviors (hunting, eating, and resting) may be performed in isolation so cats are not dependent on their social group to survive and are well equipped for independent living. Cats will utilize a repertoire of aggression and aggressive displays to communicate their needs, fears, or intentions. Hostility amongst familiar, friendly felines may be minimal and limited to passive displays while unwelcome feline invasions may be met with intense and explosive reactivity and injury.

The cat living in a home is unrealistically expected to be a good host to occasional feline visitors, welcome new feline acquisitions, and tolerate the unpredictable activities of other species, such as humans or dogs, with pleasantry. Passive avoidance is the cat's first response, which people often perceive as rude, arrogant, or independent, and fits the traditional view that cats are not social. People who like cats expect and are even amused by this response. But aggressive responses are not understood or appreciated.

Aggressive cats are risky to have at home because they pose a significant danger to family and visitors for medical injuries and emotional trauma, as well as legal liability. The target of feline aggression may be familiar or unfamiliar cats, dogs, or people. This may include inhabitants living in the same home, visitors, and neighboring animals or people.

Inappropriate elimination and aggression are consistently the two most common problems seen at behavior referral practices, with a recent trend toward an increase in aggression cases and a downward trend in spraying cases.^{1,2} In one study, aggression toward other cats accounted for a majority of aggression cases, while most cases of aggression towards people were directed toward family members.^{1,2}

Aggression includes a wide variety of behaviors from somewhat subtle body postures or facial expressions to violent attacks. This chapter will examine several different types of aggression, defined according to function, and how each can most successfully be prevented, managed, and treated. Although diagnostic considerations for each type of aggression are described herein, clinical cases of aggression are often multifactorial and the function of the aggressive display may change with time, context, and learning. The diagnostic system discussed in this chapter relies on a detailed history to provide descriptions of aggressive events, relationships, and motivation. Aggression is a symptom, not a diagnosis. Complex cases involving multiple cats, failed efforts to improve behaviors, and unsuccessful previous treatment with medication may indicate the case is best referred to a veterinary behaviorist.

As with every behavior case, it is essential that the veterinarian first assess the cat's physical health to determine if there are any medical problems that might have caused or contributed to the aggression, as well as to decide the effect that these problems might have on treating the aggression. Painful conditions (e.g., abscesses, arthritis, anal sacculitis, dental disease), conditions affecting the central nervous system (CNS: e.g., brain tumors, encephalitis), sensory decline, and endocrine imbalances (e.g., hyperthyroidism) can all have a direct effect on behavior (see [Chapter 6](#)). Medical conditions can act in concert with environmental, genetic, and other health factors to lower thresholds of inhibition and result in exhibition of aggression. Cognitive dysfunction (brain aging) may also be a factor in older cats since altered social relationships are a commonly reported sign (see [Chapter 13](#)).

Aggression between familiar household cats can also play a role in elimination problems. Cats may present to the veterinarian for primary housesoiling issues when in reality the problem may be related to intercat relationship difficulties.¹ Diagnosis of these conditions requires careful history taking with attention to intercat relationship cues. House-soiling can occur as urine marking (a form of social communication indicating stress) or as avoidance of a litterbox location due to agonistic relationships between cats in the home.

Combining a complete behavioral history and observation of the cat during a typical aggressive display is the best way to ensure an accurate diagnosis. History should include a description of the cat's facial expressions and body postures, and a description of all situations in which the aggression occurs. Care should be taken to review the history from the initial event to the current presentation since the consequences of each interaction can alter how each cat responds. For example, a fearful response in the victim cat could increase the level or intensity of the aggressor. Viewing the behavior is ideal but this is rarely safe or practical. The family may be able to document the behavior with videos, but be cautious about overinterpreting the video, which represents

a brief moment rather than the full story. Illustrations can help clients identify their cat's postures and states of arousal, especially if they have difficulty recalling precise descriptions of the cat's behavior. Illustrations are available online which may be helpful to clinicians and clients.³

Understanding the cat's intentions, motivations, and signaling is essential for diagnosis, prevention, and treatment. Prevention of deficits in socialization or introduction to new people or animals by positive association will yield a better outcome and is safer than treating aggression once it has occurred (see socialization in [Chapters 2 and 4](#) and learning in [Chapters 4 and 7](#)).

Risk analysis: prognostic factors and safety

Cats that are aggressive are at risk for rehoming or euthanasia. Misunderstandings about the cat's intentions and severity of the injuries can degrade the human-animal bond. Overview of the presenting concerns, family members, lifestyle, risk for aggressive events, severity of injuries, and commitment to the cat will influence the decision to attempt to treat a cat which has been aggressive.

Agonistic behavior can range from a cat that hisses and hides to a cat that boldly seeks its victim and then attacks. Owners with aggressive cats are thus often in urgent need of advice on how to manage danger and correct aggression problems. Initially, they should be cautioned to avoid situations that are likely to trigger or exacerbate aggressive encounters until they receive appropriate counseling and fully understand the risks involved. Owners should be informed that keeping an aggressive pet in the home always includes some risk, although some cats pose a greater risk for injury than others. As with all types of feline aggression, safety, predictability of aggressive behavior, and severity of injuries must be considered. It should never be suggested that treatment will completely eliminate any chance of future injuries.

Personality in cats has been described in other chapters but should be considered when assessing prognosis for aggression since a cat that is friendly, social, and confident may have a better prognosis than a fearful, reclusive cat. Also, a cat's inherent ability to cope with stress, novel situations, and desire to interact with people or animals may vary greatly and will influence the probability of a harmonious outcome. If a cat has never habituated to unfamiliar adults, it is unlikely that behavior modification will allow the cat to accept adults completely, much less a child that has caused a fearful or aggressive event. On the other hand, a cat that has successfully lived with many cats, people, and dogs may overcome a single, even severe, redirected aggressive episode. Cats that have previously been preferred associates and slept adjacent, nose-touched, and tail-wrapped,^{4,5} may be more likely to recover from an aggressive event than cats which did not have a preferred associate relationship.

Cats lack formal hierarchies with limited ability to avoid aggression by displaying deference and poor reconciliation skills (postconflict resolution) so avoidance, spatial distribution, and tolerance are essential components of compatible group living following an aggressive insult.⁶ Similarly, a cat that is bold, vigilant, reactive, easily agitated, and unwilling

to retreat may also have a poorer prognosis for harmonious recovery from an aggressive event. Therefore, the cat's experiences and social adaptability prior to an aggressive event may allow the clinician to predict the likelihood of a positive outcome.

Generally, behavior problems are better resolved with early intervention. On the other hand, time does resolve some aggression or fear-based problems. Prompt separation, avoidance of stress, and allowing a recovery period may provide a simple and effortless resolution. Owners often try to repeat the situations which resulted in the aggressive event to ascertain the severity of the problem and are then surprised by the cat's willingness to react with even more aggression. Inappropriate interventions will worsen the problem and the prognosis. The likelihood of a successful resolution is inversely proportional to the severity of the methods employed. Family members may have tried various punishments, including squirting with water, yelling, chasing, or swatting. They must be instructed that these methods are usually ineffective and counterproductive. Punishing an aggressive cat increases its arousal and anxiety and increases the risk of injury for family members.

Predictability and context of aggressive events determine how easily and safely the pet can be managed. Aggression that is highly predictable may be easier to prevent – if the cat attacks every time a person walks down the hallway, then strategies may be implemented to avoid attack. In contrast, if a cat attacks a person once every 20 times he is watching television it is very difficult to be prepared and avoid attack. Some cats become aroused and agitated when noises occur or telephones ring and these events may be very difficult to predict and prevent. Consideration of the predictability and context of the aggressive event is essential when advising owners to attempt treatment. Be certain to ask the clients if they are afraid of their cat, as this will influence their decision to keep the cat and to pursue behavior modification to alleviate aggression. Severity of injuries caused by the cat and explosive or impulsive nature of aggressive events are also factors which must be weighed when considering risk and potential for successful resolution. If a cat is dangerously aggressive only when unfamiliar people visit the home, then frequency and predictability of visitor arrival will dramatically affect the prognosis. Alternatively, a cat that is very solicitous and friendly to family members sometimes and aggressive at other times may be very challenging to manage safely unless there are predictable triggers and signals. Solutions for behavior problems must consider individual circumstances and accept that human error is inevitable. Whatever approach is chosen requires a committed and reliable owner and a program that can be easily implemented without force or fear.

Strategies for safe, practical management include room confinement, reward training, baby gates, crates, or harnesses. Sometimes the addition of an automatic door closer can reduce the risk for an escape, thus reducing the opportunity for an aggressive event. Sometimes a cat should be boarded rather than risk exposure at an event. Trainability is important. Ideally the cat could be trained to come on cue to a certain location and provided with a positive alternative behavior such as a food puzzle toy. The clinician must assess not only the vigilance and focus of the cat to determine if the cat could be redirected by reward training but also if the

owner has the skills and patience necessary to properly reinforce feline compliance with a verbal cue.

Cats may react to visual stimulation, so limiting the opportunities to see the triggers may be useful. This may be accomplished by blocking access to the window, covering windows with window films or window coverings, or making the site less pleasant (e.g., with a strip of carpet runner nubs up, double-sided tape, or a motion-activated spray or alarm). Furniture and desired resting places may be rearranged to prevent a perch for vigilance and reactivity. The family may describe how much the cat "loves to look out windows," but some cats are actually on guard and reactive rather than enjoying the view. Body postures and behavior must be assessed to ascertain the true motivation, and window access may need to be denied in order to reduce the cat's state of arousal.

When formulating a treatment plan, consideration must be given to the type of aggression, the cat's temperament, and the competence and commitment of individuals in its environment. The aggression release form ([Appendix C](#), form C.12, client form #1, printable version available online) can be modified for cats. Desensitization and counterconditioning techniques are frequently used for treating aggression by using repeated, controlled below-threshold exposures to stimuli that trigger the behavior while pairing positive associations with food, treats, or toys with each exposure. There is inherent risk during these exposures and the owner must provide complete management of the cat so that it cannot escape or cause injury. The situation may worsen if the cat learns that growling, scratching, and biting are effective ways to avoid an unwanted stimulus or situation. While principles of behavior modification are described in [Chapter 7](#), the art of introducing stimulus below the threshold for reactivity is essential when the undesired consequence is an aggressive response. Cats learn from each exposure. Behavior modification attempts that end with the cat in an aroused and agitated state are not productive (and not desensitizing), and are likely to be counterproductive. Failed attempts to perform desensitization exercises for an aggressive cat actually become multiple, unpleasant exposures which further condition the aggression. Behavior modification is an art which must be adjusted to the individual cat based on the cat's perception of the outcomes, not the clinician's or the owner's.

The decision to keep a cat that is aggressive is a personal one. Many factors affect risk and prognosis, as well as the family's willingness to proceed and accept risks. Family members may feel guilt and remorse for their cat's behavior and their inability to "fix" the problem. Clients may need assurance that it is acceptable to decline to treat an aggressive cat. The clinician must evaluate risk by assessing the cat, the environment, the problem and the family members to determine if safety can be insured and long-term expectations are acceptable ([Box 21.1](#)).

Learning and aggression

There is generally a learned component in cases of aggression. Learned behaviors may arise out of a single aversive event or multiple exposures to mildly threatening stimuli. Behavior can intensify from repeated provocation. Pets that

Box 21.1 Factors of concern in determining the prognosis for safe resolution of aggression

- Age at onset
- Duration of problem
- The cat's behavior and personality before the aggression began
- The temperament and emotional stability of the cat
- Type of aggressive behavior
- Predictability of aggressive behavior
- Intensity of the aggressive behavior
- Context of aggressive behavior
- Target of the aggressive behavior
- Severity of the injuries and presence of bite inhibition
- Successful diagnosis and treatment of concurrent medical problems
- Age, health, ability, and commitment of family members to safely implement the program
- Whether immediate management steps can be taken to avoid aggressive encounters safely
- The availability of a safe and effective behavior program and/or drug to reduce arousal and aggression

are threatened or punished for aggressive displays can learn to associate pain or fear with certain stimuli and become even more aggressive each time the situations recur. Owners that are anxious or threatening in the cat's presence will further aggravate the cat's aggression. When an aggressive display successfully removes the source of fear, pain, or territorial intrusion, the cat learns to use the display in any future fearful or threatening encounters. The response of a victim can also influence the aggressor. Cats that display fear or retreat might actually encourage the aggressor to continue attacks. While bold and confident responses might cause the aggressor to back down, if the victim displays defensive aggression, this could instead lead to fights of increasing intensity.

Play aggression

Play aggression is a common behavior in kittens and young cats with a natural strong predatory drive. It is the most common type of aggressive behavior that cats exhibit toward their owners. In fact, play-related aggression is often reported as one of the most common reasons for owner-related aggression at behavior practices.^{2,7} Predation is a highly motivated, instinctive behavior for cats. The initial movements of this behavioral sequence are characterized by silent stalking. The body is held close to the ground during the approach and the attack is patterned to achieve a quick kill of the prey. Predation is not preceded by vocal or postural threats because it represents a normal instinct to hunt and kill that would not include warnings. Kittens learning how to perfect their hunting skills may practice their predatory skills on any available target. Although the name implies a rather benign behavior, play attacks can be quite intense and may result in serious injury if biting and clawing are done without inhibition. The behavior can be quite alarming and frightening for family members who may think they have a "mean" pet in the home. Injuries to family members may

occur by attempting to handle, restrain, or punish the aroused kitten.

Kitten play usually involves various elements of intraspecies social and predatory behavior. Play behaviors include: exploration and investigation; stalking, chasing, attacking, pouncing, and leaping sideways; fighting; wrestling; swatting and biting. Kittens typically "play hard" with each other but quickly learn when they are actually causing pain. Since the bitten kitten will either stop playing or react with defensive responses, hard bites tend to become inhibited. Swatting is usually done with claws retracted. When a kitten grows up without appropriate social interaction that discourages hard biting, such as a kitten that has been hand-reared with no contact with other cats, it may bite without inhibition into adulthood and be quite dangerous.^{8,9} Vocalizations are rare during this type of aggressive attack, which can help differentiate it from other types of aggression (e.g., fear-related, territorial, redirected, pain-induced). Owners often contribute to the problem by playing with kittens in a way that encourages attacks toward hands and feet, such as allowing kittens to bite hard at a gloved hand. This behavior generally begins when the pet is a kitten, peaks around 9–12 months, and then wanes as the cat grows into adulthood.

Some degree of play aggression is normal, but situations warranting special consideration include:

- biting or scratching that is deep, uninhibited, or directed toward the hands or face
- behavior directed toward a family member with fragile skin or anyone especially sensitive to infection or injury
- when children are the target of the aggression
- nocturnal activity that keeps family members from sleeping
- behavior that upsets a passive or fearful pet in the home.

Diagnosis and prognosis

Play aggression is typically seen in kittens and young cats (Table 21.1) and is characterized by stalking, pouncing, biting, and scratching in a playful context. Silent ambush, sideways hopping, and quick carefree retreat are distinguishing features of the attack. Victims are generally familiar people or housemate animals, and the kitten may develop a "preference" for one target. Bite inhibition varies and is often

Table 21.1 Factors favoring feline play aggression

Factor	Comments
Age of cat	The problem is more common in kittens and young cats
Play experience as a kitten	The pet was encouraged to chase and attack hands and feet
Number of cats in the household	The pet lives alone without other feline companions
Type of play with owners	Play frequently involves rough play and teasing the pet with fingers or toes
Amount of time spent alone	The pet is alone most of the day and spends little time with humans or other pets

influenced by opportunities for early learning experiences with queen or littermates. Poorly inhibited bites may result in serious injury while attacks that result in inhibited bites may be underreported and accepted as normal kitten behavior. In most cases, these problems are seen in single-cat households where the pet does not have the opportunity to engage in normal play with conspecifics.^{2,10} In multicat households, problems occur when the object of play is another cat that is passive, weak, fearful, old, uninterested in, or unable to respond appropriately (e.g., due to medical problems or insufficient previous socialization). The prognosis for resolution is good, but if handled improperly or harshly, play aggression can develop into fear-related aggression.

Management and treatment

Play aggression is a natural, predatory-driven behavior that should improve when suitable outlets for predatory stalking and attack are provided that satisfy the cat's needs. If this problem is effectively managed while cats are still young the problem will usually wane with maturity (Box 21.2). The most important consideration is to provide and encourage plenty of hunting opportunities which involve acceptable chase and attack behavior. Toys that bounce, flutter, or move in a way that entices the cat to chase should be provided. Teasing or wrestling by people should be avoided. Teaching the cat to fetch or at least pursue a tossed toy may be useful to pre-empt an attack. Some kittens can be trained to go to a specific location on cue in anticipation of a treat reward. Owners should be discouraged from using any type of physical punishment to correct the behavior because mild punishments will be perceived as invitation for play and harsher punishments may cause fear and defensive aggression.

Management can be especially challenging when the victim is another pet in the home. Providing the victim pet with a secure location to avoid interaction with the kitten (elevated resting areas the kitten cannot reach) or seclusion in a room or crate may be helpful. The kitten should be encouraged to interact with food puzzle toys, feather toys, catnip toys, or motion-activated electronic toys. The predatory kitten can wear a collar or harness equipped with a noisy bell to give advance warning to other members of the household, allowing them to anticipate and avoid an attack. Anxiolytics may be beneficial for the victim pet in some cases. Play-related aggression to humans is one of the few behavior problems that might be corrected by adding another pet to the home. Adopting a young social cat with similar play drive and temperament may provide continuous and suitable

Box 21.2 Managing feline play aggression

- Owner should initiate play sessions using chase toys
- Avoid engaging the cat in aggressive play or encouraging attacks towards hands
- Redirect play toward appropriate objects (e.g., moving toys)
- Provide food puzzle toys to simulate hunting and provide oral stimulation
- Avoid all physical punishment (hitting, swatting)
- After the cat tires of chasing a play toy, try a novel toy since the cat may be tired of the toy but still in need of play
- Consider getting another cat of similar age and temperament

outlets for interactive play but a temperament mismatch will result in another victim in the household (see Chapter 4 and Box 4.7).

Prevention

Severity of play aggression may be minimized by early socialization, provision of appropriate object and social play, and avoiding punishment. Hand-raised kittens may be at particular risk if they do not have sufficient contact with other cats and play toys for chasing and biting during rearing.¹¹ Adopting two cats may be preventive.

CASE EXAMPLE

Mimosa was an 8-month-old Siamese kitten adopted from a rescue organization at 12 weeks of age. She was relinquished to the rescue organization at 3 weeks of age with one of her littermates. Mimosa was curious, active, confident, and outgoing. She bit family members' faces and hands while they were sleeping and most attacks occurred between 5 and 8 a.m. The household included Galax, a 10-year-old German shepherd; Galax was also frequently attacked by the kitten while he was sleeping.

The kitten was taught to fetch toys and learn to sit on cue. The family was advised to discontinue punishment strategies, engage in reward-based training, and offer enrichment activities such as videos and catnip toys. She was given food puzzle toys at each meal and restricted from the bedroom at night. Her behavior improved and the aggression was reduced, though her lively need for activity persisted into adulthood.

Fear-related aggression

Fear-related aggression results when a cat is exposed to someone or something it perceives as being a threat, and becomes aggressive, especially if there is no opportunity to escape. Aggression may also arise if the cat is frightened by inanimate stimuli such as sounds, in which case the aggression may be redirected to a nearby person or animal (see [redirected aggression](#), below). The more threatening the stimulus is to the cat, the more heightened the fear response. The behavior may be displayed when a cat is approached, touched, looked at, or stared at (Figure 21.1). Fear-related aggression is sometimes referred to as defensive aggression.

Kittens lacking early socialization are more likely to be fearful of people and thus defensively aggressive when approached or handled. Factors contributing to the development of fear-related aggression include genetics, environmental experience, and learning. Cats that have aversive experiences associated with humans (such as punishment) or other cats may become frightened of them or similar individuals. Some cats require a very strong stimulus to elicit fear, while others become extremely anxious in response to mild stimuli, such as small movements, a noxious odor, or a novel noise. Aggressive behavior can also be self-reinforcing when growling, threatening, or biting drives away the stimulus that caused the fear reaction.

Diagnosis and prognosis

Fear-related aggression is typified by facial expressions and body postures. The cat usually displays a combination of

defensive behavior (pupillary dilation, ears flattened against the head, tail tucked to the side of the body, lowered body position, leaning away from the fear-eliciting stimulus) and aggressive behavior (piloerection, hissing, teeth bared, growling, swatting, biting, and scratching (Figure 21.1)). However with repetition and learning the aggression may appear more offensive and less fearful if it successfully causes the stimulus to retreat.

Defensive signals include:

- hissing, spitting, growling
- teeth bared
- ears laid back, flattened against the head
- crouched body position
- body lowered, legs tucked under body
- rolling to the side
- tail lowered or tucked under to the side.

The prognosis for fear-related aggression depends on a number of factors which are interrelated and described

earlier in this chapter but careful consideration must be given regarding the victim and the frequency, intensity, context, and severity of the attacks.

Factors suggesting a promising prognosis include:

- adult onset
- problem of short duration
- mild level of arousal
- the threshold for aggressive responses is relatively high
- all fear-eliciting stimuli are well defined
- exposure to fear-eliciting stimuli can be controlled
- the cat can be protected from strong stimulus exposure
- aggression is inhibited; injuries have been minimal
- potential for injury is either tolerable or avoidable
- victim of attack is an adult willing to keep the cat, commit to the program and can insure safety
- owner can learn to identify and read signs of fear and aggression.

Management and treatment

Behavior modification for fear-related aggression involves exposure techniques (Table 21.2), including habituation, desensitization, and counterconditioning. Habituation may occur when the fear is mild and the cat is able to adjust at its own pace. Early recognition and intervention lead to the most effective cures. Full exposure to threatening stimuli that elicit a strong fear response should be avoided. Formulating a treatment plan involves identifying fear-eliciting stimuli, identifying the threshold for arousal, and using controlled exposure sessions to reduce the pet's fear. Desensitization involves repeatedly exposing the cat to modified or muted stimuli that are below the threshold that evoke a fear response until the cat is comfortable. Many cats may be successfully treated with exposure techniques involving food rewards or favored play toys to encourage appropriate responses and associations with the stimulus (counterconditioning). Some cats may appear more aloof, distant, and uninterested during a successful desensitization experience



Figure 21.1 This cat displays fear and defensive aggression in response to a dog. (Courtesy of Dr. Sophia Yin.)

Table 21.2 Managing feline fear-related aggression

Steps	Comments
Identify stimuli	• Identify all fear-eliciting stimuli and the thresholds (intensity or distance) at which that fear is manifested. During treatment, it is important that the cat be insulated from anything that would cause anxiety or fear
Desensitization and counterconditioning	• Cats should be separated from the stimulus until ready for controlled exposure. Control mechanisms such as verbal training to come for rewards, a body harness, or a cage might need to be implemented in advance of exposure • If the threshold for fear is a man within 3 meters of the cat, the man should be visible but further away than 3 meters when desensitization exercises begin • A family member provides a reward (consider clicker training if the sound doesn't frighten the cat) when the cat is not fearful. Very gradually, the man moves closer. It may be helpful to use a harness or pet carrier for safety • Patience is very important and this process must not be rushed
Drug therapy	• Fluoxetine, paroxetine, and sertraline may be effective at modifying the extreme states of anxiety, panic, arousal, or vigilance in some cats • Drugs such as buspirone or benzodiazepines may help to reduce fear and anxiety to a level that is low enough to allow behavioral modification to begin. These drugs may help to make the cat more bold and confident but may disinhibit and cause aggression. Benzodiazepines might be a consideration for counterconditioning with food since they decrease anxiety and increase appetite
Pheromones	• Felifriend applied to the individual (cat, person, dog) to whom the fear is exhibited or a Feliway room diffuser introduced into the environment may be helpful

and clients must appreciate this absence of fear as a sign of improvement.

Exposure techniques are intended to change the cat's response to stimuli or situations that trigger aggression from a fearful one to a pleasant association. It is important to give the owner careful guidance to determine all stimuli that cause aggression and formulate an appropriate treatment plan, complete with conditioning sessions. Patience is particularly important since the process must proceed very slowly and below the cat's threshold to become aroused – if the cat is aroused, then the stimulus is too intense and the owner is proceeding too quickly. Some owners begin by immediately asking a visitor to extend a hand with a food treat toward the pet's face. This usually does not work since the attractiveness of the food is initially not strong enough to overcome the close proximity of the fearful stimulus.

For example, if women cause the cat to be fearful when they approach to 3 meters or closer, then sessions should be set up so that a woman approaches at 4–5 meters and the owner gives a very tasty food treat if the pet shows no sign of anxiety when the woman is visible. After several positive associations, the woman can be very gradually brought closer and closer. It is advisable that the person avoids threatening gestures or eye contact and remains quiet and calm. Using a wire crate may be beneficial in some cases because it will allow the owner to expose the cat to the fear-eliciting stimulus with no chance of the cat escaping or causing harm (Box 12.2). Crate confinement may be detrimental in others as the cat becomes highly reactive while retreat is impossible. Therefore it should only be considered if the cat will successfully habituate during the session. If the cat is willing to take treats during the exposure, the first step in a counterconditioning program will have been achieved. A leash and harness may be beneficial if the cat has been previously accustomed to wearing one. If the cat has never worn a harness it is helpful to teach the cat to accept it by classical conditioning *before* attempting to use harness control during a conditioning exercise. The family should be patient since desensitization to the harness may take a couple of weeks depending on the arousal of the cat and the ability of the owner. While desensitizing a cat to wear a harness is a difficult and tedious task for most clients, it is likely easier in comparison to desensitization to the approach of a fear-evoking person. Therefore, client success at the exercise with a harness may predict success in other contexts. During exposure exercises, the challenge is to provide sufficiently enticing food treats for the cat and introduce the stimulus below the threshold for anxiety. Careful observation of the cat's tension or reactivity is essential. Withholding the treats except during exposure training increases their value and ensures contingency by linking special treats with the presence of the stimulus.

During retraining, drug therapy may also be a consideration to reduce arousal and impulsivity. Drugs may alter the cat's threshold of tolerance of the stimuli, so that the number of aggressive events may be lessened or more easily prevented or controlled. Medication may be particularly important in situations where exposure to fear-eliciting stimuli occurs daily. With pharmacological support, the window of opportunity for beneficial behavior modification may be more attainable by cats and their owners. Selective

serotonin reuptake inhibitors (SSRIs: fluoxetine, paroxetine, or sertraline) are most often utilized in an effort to control impulsive, explosive, and exceptionally aggressive displays, or for situations of excessive anxiety or fear. Buspirone may also be effective if there is mild anxiety, but may cause disinhibition and lead to increased aggression. Chewable veterinary behavioral medications that are licensed for dogs may improve compliance since they are more palatable, or at the very least, less aversive in taste than human formulations. The benzodiazepines may be useful for refractory cases, since they not only have an immediate effect on reducing anxiety and might increase appetite, which would be beneficial for counterconditioning. However, they have the potential to sedate, cause incoordination, and possibly disinhibit, leading to increased aggression, often require multiple doses per day, may have a rebound effect if not withdrawn slowly, and may cause paradoxical effects such as increased agitation. Since, there have been reports of rare cases of hepatotoxicity in cats given diazepam, the use of lorazepam, clonazepam, or oxazepam which has no active intermediate metabolites might have less potential for adverse hepatic effects, although this is as yet unproven (see Chapter 8). One particular use of benzodiazepines is in a food-based counterconditioning program since they not only reduce anxiety but also increase appetite.

Feline facial pheromones may provide emotional stabilization (see Chapter 9). Synthetic F3 fraction, Feliway, is associated with environmental marking and recommended to reduce stress and anxiety. The synthetic F4 fraction, Felifriend, promotes familiarization and allomarking in cats so it is best applied on the unfamiliar person or animal prior to an initial introduction. Felifriend is only available in several European countries at this time. Thus Feliway may reduce anxiety and Felifriend may be useful in a desensitization program applied to an unfamiliar person, cat, or dog.

Until the pet is successfully treated, it should be prevented from having any exposure to stimuli that cause the anxiety or might elicit fear-induced aggression. Repetition of unpleasant exposures for the cat is likely to worsen the fear rather than improve it – many clients attempt to desensitize the cat and instead they are actually repeatedly inducing fear. The owners must be advised of the potential risks of handling a cat with fear-related aggression and must be counseled to avoid handling the cat when it is aroused and agitated. Although the goal is gradual improvement through positive exposure to stimuli, prevention and avoidance are often the most practical long-term strategies.

Prevention

Selecting a friendly, well-socialized, outgoing kitten can be very important, as kittens that exhibit fear and aggressiveness will likely continue to do so as adults. Owners should be advised to adopt a kitten by 7 weeks of age from a family situation that has provided an adequate amount of gentle handling, positive experiences, and interactions with people and other animals. In most cases, fear-related aggression can be effectively prevented by encouraging owners to socialize their new kittens adequately. Veterinarians should educate owners about the concepts of socialization, habituation handling, and behavioral development, and how they can prevent such problems. Introductions to visitors should be

done at the cat's own level of comfort, rewarding it with treats or play if it approaches. When introducing a new kitten to a new household with existing cats, the kitten should be given its own room, and introduced only when there seems to be no anxiety in either cat about the presence of the other cat, at which point they might be placed together while supervised and engaged in enjoyable activities such as feeding or play.

CASE EXAMPLE

Brenda was a 5-year-old, spayed female domestic (American) long-haired cat adopted by her owner at 8 weeks of age from a friend at church. The woman lived by herself and had few visitors, most of whom were women or children. The cat was playful and confident when it was alone at home with its owner, but became nervous and usually hid when a visitor entered the home, especially when the visitor was a man. The owner had recently begun a relationship with a man named Ralph whom she met at work. She was disconcerted about the fact that Brenda had not taken to her new friend. In an attempt to facilitate the relationship, she encouraged Ralph to attempt to pick up the cat during each visit and give it a food treat. Each time he did this, Brenda would become very agitated, hiss, growl, flail her legs, and occasionally bite to get released. Instead of getting better, Brenda's behavior worsened. The cat became more nervous around Ralph and frequently hissed at him when he visited.

The owner was advised that she would have to encourage a relationship between the cat and Ralph much more gradually. To make Brenda less anxious, Ralph was told to enter quietly, maintain a distance from the cat, avoid eye contact, and not move toward it when he was in the apartment. Whenever the cat ventured out from hiding, Ralph was instructed to flip a very tasty piece of food toward it casually without looking directly at or reaching for the pet. Initially, Brenda ignored the treats, so food was taken away 8–12 hours prior to his visits in order to increase her appetite. After 1 week, the cat was eating the food flipped to her, and Ralph was instructed to toss the food so that it would land closer and closer to him. Brenda was willing to take food from his hand 2–3 weeks later. Next, the food was offered on the sofa at the end opposite to Ralph and then closer to him. Through subsequent visits, Ralph gradually moved the nonfeeding hand closer and closer to Brenda until he was able to stroke the cat gently when he was feeding her. This last step took about 5 months.

Petting-induced aggression

Some cats have the disconcerting habit of accepting petting and attention only to respond by biting when they have had enough. In a recent case study, this was the second most frequent form of aggression in referred cases.² These cats may seem to enjoy social attention and may initiate social interaction by crying, rubbing against people, or jumping into their laps. Cats will bunt (rub with their head) against a person in the same way they greet another cat. Though this is an affiliative greeting, people often assume the cat would like petting or physical interaction. Some do, some do not. Consider the complexities of human greetings – greetings are expressed by shaking hands, smiling, or hugging, yet solicitation and even acceptance of these human greetings do not imply acceptance of more invasive social interactions such as kissing, tickling, or patting a person's belly. Humans have social boundaries and so do cats. Some cats may not

desire physical attention or may have a limited threshold for physical attention. This is more problematic when the owner's need to interact by physical attention exceeds the tolerance of the cat. The cat may desire to be near the owner but may not necessarily be soliciting physical handling. Some grooming interactions between cats may actually be a way of avoiding overt aggression, though agonistic behavior by the groomer may still occur following a bout of grooming.¹² The observant owner may be able to tell when the bite is about to occur, as the pet usually will show typical behaviors, including fidgeting, tail twitching, tenseness, leaning away, ears flattened against the head, retraction of the lips, hissing, or even running away. These are cues to cease the offending interaction – a socially adept cat would read these cues of social unrest and walk away. Owners that then chastise or scold the cat will often elevate the cat's reactivity rather than diminish it. Classically, these cats are reactive when stroking occurs over the lower back, but be sure to have the owner describe the interaction, as the response may be different for each cat.

Diagnosis and prognosis

The history may reveal a cat that is initially calm and comfortable with being petted, but bites after a prolonged period of attention. Other cats are tense and barely tolerant of any petting but desire to rest in close proximity to family members. The bites may be inhibited or uninhibited. While vocalization may precede the bite, this is not as likely as with other types of aggression, such as fear-related, pain-related, redirected, or territorial aggression. Tail flipping or swatting may precede biting.

The prognosis for correcting this type of behavior is fair to guarded, depending on the severity of the injury, the pet's threshold for physical interaction, the cat's ability to communicate discontent, the predictability of the behavior, and the willingness and ability of the owner to accept a cat that may not enjoy physical interactions. The prognosis is poor if the cat's reactivity is extreme, the tolerance for any physical interaction is low, and the cat lives with a family member determined to stroke it. Young children are at a greater risk, as they may be more persistent, unable to read the postural signs that a bite is imminent, and may startle a cat with their quick movements. Acute or old-age onset of petting-induced aggression warrants consideration of medical conditions (e.g., neuromuscular pain, hyperthyroidism, gastrointestinal disorders, otitis, abscess).

Management and treatment

Harmonious resolution may be achieved if the cat's acceptance for stroking is in balance with the owner's willingness to cease physical interaction before the cat is provoked to bite and if the client accepts the cat's distaste for prolonged physical interaction. The cat's willingness to engage in stroking can be increased by desensitization and counterconditioning which will improve the bond with the cat and reduce the risk of attacks. To do this, the owner must first determine how long the cat can *always* be stroked before it becomes agitated. It should also be determined when the cat will most likely be in the right mood for affection and engage in social interaction. These times may be limited to very specific



Figure 21.2 Desensitization and counterconditioning – petting is associated with favored food rewards and the time and intensity are gradually lengthened with each session.

situations. The cat's mood and willingness to interact should determine the pace and design of the desensitization program. Petting should then take place for a short period of time and stop before the threshold for anxiety or tension is reached. A high-value food incentive may be given simultaneously. Provision of a soft, highly palatable food on a spoon or spatula provides a means of giving the incentive (reward) throughout the patting and withdrawing when the stroking is discontinued.

The cat should not be restrained or confined, as it is an acceptable option for the cat to elect to jump down or move away rather than become aggressive. The owner may cease interactions and move away without physically manipulating the cat if needed. The sessions can gradually be lengthened as the cat's arousal and tension decrease, and as the cat learns to enjoy longer stroking sessions in anticipation of a food reward (desensitization and counterconditioning). Conditioning can be facilitated by feeding on a schedule and holding the sessions just prior to mealtime when the cat might be most food-motivated. Special food treats should be restricted to training sessions (Figure 21.2). The owner must be instructed to avoid absentmindedly stroking or approaching the cat between counterconditioning sessions since these may result in arousal or tension. If the cat solicits interactions, the owner may engage the cat for a brief period but not longer than the conditioning sessions. As improvement is noted, the owners may initiate short play and affection sessions but must stop the affection or play before the cat gets aroused or aggressive. Food rewards can be given during each session. In addition, food, catnip, or a play session might be given immediately following each successful petting session as a reward for a desirable outcome and as a positive end to each session.

Physical punishment, startling, or yelling at the cat must be avoided. Hitting the cat on the nose, swatting it, or forcefully tossing it to the floor makes matters worse, as the cat will learn that social interactions are unpredictable and unpleasant. As the cat becomes more comfortable with predictable and positive physical social interactions, it may

solicit attention. This is an appropriate and desirable outcome, especially if the cat was not social and solicitous previously.

Prevention

Early socialization, grooming, and frequent gentle handling of the young kitten may help to prevent this problem, especially if food rewards are associated with petting and handling and each session ends on a positive note.

CASE EXAMPLE

Doberman was a 9-year-old domestic (American) shorthair who was reactive to noises, other animals in the home, and visitors. He frequently sat close to the owner on the couch or bed or at the kitchen table, and he also climbed in the owner's lap or on her shoulders. The owner would stroke him but if stroking or handling continued beyond a few seconds he spun around and swatted with his claws, sometimes trying to bite at the same time. He was most amenable to attention in the early morning or midafternoon when the owner sat at the kitchen table for tea. He could be groomed for 1–2 minutes but then became aggressive. Doberman did not play much but did enjoy unraveling the owner's yarn. A Feliway diffuser was plugged in near the kitchen table. The owner was instructed to avoid stroking Doberman except during the early-morning and afternoon tea times, and to keep these sessions very limited in duration. Brief stroking was accompanied by rewards of canned cat food given on a spoon. Daily play sessions with fishing pole toys and yarn were first initiated during tea times. Aggression to the owner was reduced and the owner was able to bond and enjoy a daily tea ritual with a patting session of a few minutes.

Redirected aggression

Redirected aggression occurs when a cat is aroused, reactive, or responding to one stimulus and then becomes aggressive to another nearby person or animal. This bystander becomes the victim of the aggression. In some cases the motivation and stimulation of the aggressor may not be readily apparent. This condition may manifest initially in many ways, but the relationship between the aggressor and victim may quickly change as a result of this encounter. The salient feature of this pattern of aggression is that the target of the animal's aggression is not the stimulus that triggered the state of aggressive arousal.

Classically, the attack occurs when the victim (person or animal) approaches, either accidentally or intentionally, and is near or touches the aroused cat. Since the aggressor may be vigilantly focused on the stimulus, the victim may approach without noting that the cat is in an aroused state but in some cases just happens to be in the vicinity of the aroused cat. In some situations the aggressor may charge to attack the victim. The attacks are often acute, intense, and seem unprovoked. Multiple deep bites and severe injuries may occur. The family is often quite unsettled and unable to understand the sudden and apparent unpredictability and unprovoked nature of the aggressive displays.

Stimuli that can cause an aggressive state include the sight, sound, odor of another cat, and unusual noises.¹³ Unfamiliar people, other animals, and unfamiliar environments may also be inciting factors. Aggression is most commonly

directed at the owner or other cats in the home, but may be directed to a nearby dog. If the cat appears to display a defensive body posture immediately before the incident, the behavior is likely most often motivated by fear.¹³ If the posture is more confident and assertive, territorial aggression may be the underlying problem.

The aroused cat may exhibit varying degrees of hypervigilance, agitation, nervous pacing, piloerection, fixed gaze, tail flipping, dilated pupils, or low vocalizations. During the attack, the cat usually exhibits very loud growling and yowling, vigorous lunging, and attacking. Bites may vary in severity from extreme displays to uninhibited bites. A common situation is one in which an indoor cat that is sitting by a window becomes aroused or distressed upon seeing or hearing an outdoor “intruder” cat. The cat then directs its aggression to a person, cat, or dog who happens to be nearby. If these episodes occur when the owner is away, out of the room, or sleeping, the owner may see or hear the results of the fight but not be aware of the feline intruder (or other stimulus) that initiated the cascade of aggression.

If an aggressive display or heightened arousal by a cat toward an unfamiliar cat outside the home is observed, the owner may initially attempt to disrupt the event by nudging the pet away from the window or punishing the cat, or calm the cat by picking it up or petting. Any of these interactions may cause the cat to attack the owner. In another scenario, a cat that is outdoors may encounter a situation that causes fear and arousal. Aggression might then be initiated if a family member approaches to bring the cat indoors. Another situation which may be classified as either redirected, pain, or fear-related aggression occurs when a veterinarian gives an injection and the cat bites the technician or owner (see [Chapter 23](#)).

Redirected aggression is a common cause of acute-onset aggression between cats in the same household that have been living together amicably for quite some time. Occasionally, a family member will have observed the inciting event. More often this is not the case, and owners are often perplexed about why their pets suddenly don't get along. The injuries inflicted may be quite serious and the attacks unpredictable to the victim. In cases where there is an unexpected occurrence of intercat aggression for no apparent reason, historical evidence might suggest that one or both cats have exhibited high levels of fearful or territorial arousal, and unfamiliar cats have recently been visiting the pets' territory. In such instances, redirected aggression may be diagnosed even without knowing the inciting event.

Stimuli that can cause redirected aggression include:

- sight, sound, or odor of another cat or other animals
- unusual noises or visual stimuli
- unfamiliar people
- unfamiliar environments
- handling and restraint
- medical (pain and irritability).

Diagnosis and prognosis

In general, the history suggests victim proximity at the time the cat was threatened, territorially aroused, afraid, or fighting. Pathophysiologic etiologies should first be ruled out through a good physical exam and appropriate lab tests.

Medical ruleouts include diseases of the CNS (e.g., tumors, seizures), or any medical condition that might cause pain (e.g., abscess, intervertebral disc disease), or increased irritability (e.g., hyperthyroidism, inflammatory bowel disease) (see [Chapter 6](#)).

The diagnosis involves recognizing that a specific stimulus or situation has aroused the cat and resulted in a nearby person or animal being attacked. A thorough behavioral history is very important. The interviewer should get a detailed description of the problem, including all other incidents in the pet's past when it exhibited aggression or high levels of fearful arousal. Since a cat may stay in a high state of arousal for hours after stimulus exposure, it is possible that the owner may not know what stimulus led to the aggressive attacks. It may be helpful for the owner to keep a journal of aggressive events.

The prognosis is poor if the cat is frequently and easily stimulated to a state of aggressive arousal, if the stimuli are difficult to identify or prevent, if the aggression is intense, prolonged, or uninhibited, and if the pet actively pursues the victim when it is aroused in the absence of initial contact by the victim. Family members who are unable to recognize when the cat is aroused are in particular danger.

Factors influencing the prognosis of redirected aggression include:

- ability to identify arousing stimuli
- ability to reduce exposure to stimuli
- presence of feral, stray, or owned cats outside home
- frequency of stimulus exposure
- the cat's threshold for becoming aroused
- severity of the aggression
- ability of family members to recognize and avoid the aroused cat
- the quality of the cat's relationship with the target of redirected aggression before attack.

Management and treatment

Treatment involves identifying triggers for arousal and then removing the pet's exposure to the stimuli and/or modifying the response to the stimuli ([Table 21.3](#)). If the pet becomes highly aroused after going outdoors, it should be confined indoors. If it becomes aroused watching outdoor cats through windows, that opportunity should be removed by closing drapes, blocking access to windows, covering windows with frosted window film, placing deterrents such as double-sided sticky tape, or motion-activated alarms on windowsills and preventing access to screened porches. The owner should discontinue feeding stray animals, secure trash cans to discourage scavengers, and remove bird feeders that might provide hunting opportunities for predatory cats. Unwelcome feline visitors may be further discouraged by environmental modifications, including the use of repellents (fox urine or cayenne pepper), motion-activated sprinklers, aerosol repellents or ultrasonic deterrents or unpleasant surfaces (upside-down carpet runners, double-sided tape, or rough-surfaced/shoe-cleaning welcome mats). Capture and humane removal may also be a consideration for stray animals. This approach (preventing stimulus exposure) is discussed in further detail in [Chapter 19](#), under urine marking.

Table 21.3 Managing feline redirected aggression

Identify stimuli for aggressive arousal	- Consider all situations or stimuli that cause anxiety or arousal - Have the owner keep a diary of events
Prevent exposure to stimuli	- Close windows, drapes, or blinds or block access to locations (window sills, sun porch) where cat can visualize or hear stimuli - Confine the cat when there are no other methods of avoiding stimuli
Carefully interrupt the behavior	- If trained to respond to a verbal cue for a reward (e.g. treat time, play time, come) try to cue the cat away for the reward - Use a device (whistle, horn, water gun) to distract the pet while being careful not to induce fear. Avoid yelling or making eye contact when doing this - Avoid doing anything that makes the pet more aroused or anxious
Safety when dealing with arousal	- Teach the family to recognize the aroused cat - Consider removing people and victims from the room and leaving the cat alone if possible - Keep a heavy blanket, pillow, cat-proof gloves, or fishing net to move the pet safely to confinement - A leash and body harness can be left on the pet for control and to guide it safely into a quiet room when it becomes aroused - Food lures may work if the cat is not exceptionally aroused - Confine in a darkened, quiet room until calm
Behavior modification	- If aggression has arisen toward another household pet, gradually reintroduce using desensitization and counterconditioning - Desensitize and countercondition the pet's response to anxiety or aggression-provoking stimuli
Medication	- A selective serotonin reuptake inhibitor (fluoxetine, paroxetine, sertraline) can be used for the aggressor cat as well as the fearful cat that is the target of the aggression - Other anxiolytics, including buspirone and benzodiazepines, may reduce anxiety and build confidence in the victim cat - Pheromone therapy may also help to reduce anxiety

It is important that owners understand what causes the aggression, how to recognize signs of arousal, how to avoid problems, and how to handle the aroused cat. When the pet is in a high state of arousal, the ideal way to respond is to avoid the cat, call it away with a lure or a reward-based command (e.g., food time, play time), or direct the cat into a darkened room and close the door without touching it until it settles down. Settling may take several hours or several days. If the cat must be handled, covering it with a thick blanket may be calming and will reduce visual stimulation. The cat's view of the target may be blocked by a piece of large poster board; introducing a visual barrier may reduce arousal but should not be used to threaten the cat. Thick leather gloves may prevent injury but not reduce arousal.

When the aggression is directed toward another pet in the home, the pets should be separated until well after arousal has subsided, which may be hours or days. Reintroduction should be gradual, closely supervised, and associated with positive interactions such as feeding, just as if new pets were being introduced to the home. In highly aroused cats this reintroduction program can take from a few days to a few weeks (see [aggression between cats in a household](#), below). Desensitization, counterconditioning, and timely distractions (tossing several treats) might occasionally be used to change the cat's response to stimuli that cause it to become aroused if stimulus control for exposure can be achieved.

Medication can be beneficial for reducing the cat's response to environmental stimuli (see [Chapter 8](#)). If the victim cat has begun to display excessive fear to the aggressor, it may also benefit from drug therapy. Mood stabilizers such as SSRIs (fluoxetine, paroxetine, sertraline) or perhaps tricyclic antidepressants (clomipramine, amitriptyline) may be helpful to reduce overall arousal and reduce the possibility of new episodes. Benzodiazepines (alprazolam, lorazepam,

or oxazepam) may stimulate the cat's appetite, which may be a beneficial side-effect of a food-based counterconditioning program. Feliway (synthetic pheromone), might be helpful, as might anxiolytic supplements such as L-theanine and alpha-casozepine (see [Chapter 9](#)).

Owners may resort to physical punishment and yelling at the cat but these tactics are generally unsuccessful and often make the situation worse by heightening arousal and aggression. While startling with punishment devices may interrupt the aggressive display (and may be necessary in emergency situations), it is counterproductive for promoting a harmonious reconciliation.

The decision as to whether to keep the pet in the home should be based on the predictability, frequency, and severity of the attacks, the ability of family members to recognize and avoid the aroused cat, and the owners' ability to recognize and control arousing stimuli. If there are people or other cats in the home who cannot avoid the aroused cat, and exposure to the stimuli cannot be prevented, serious consideration should be given to removing the cat, hopefully to a home where stimuli that might incite arousal can be effectively avoided.

Prevention

Socialization to other cats and people and habituation to noises may help to prevent the fear that is often the inciting factor. Prevention of attacks involves knowing how to recognize arousal, and modifying the environment to reduce or prevent exposure to stimuli by keeping the cat from the stimuli or the stimuli from the cat. Desensitization and counterconditioning at sites such as windowsills might be practical if triggers are identified early and stimulus exposure can be controlled.

CASE EXAMPLE

Maggie, a 3-year-old female spayed domestic feline and Spencer, a 3.5-year-old neutered male domestic feline, were resting in the sun room when an unfamiliar cat ventured into the yard. Maggie became agitated and reacted at the window, then ran to another room to hide under the bed. Meanwhile, Spencer continued to watch at the window of the sun room. During the night the cats fought in the sun room. Maggie's fear and Spencer's arousal may have both contributed to the redirected aggression. A window-darkening shade was installed to reduce the sight of stimuli in the yard, and Spencer was confined to the sun room and Maggie was confined to a bedroom. Over the next week the cats were reintroduced three times, and each time Maggie charged at Spencer. The family tried to confine Maggie to the sun room and give Spencer access to the home, but Maggie became reactive and would not settle down. The family veterinarian suggested the cats be separated by a barricade made of Plexiglas but Maggie charged at the Plexiglas until the owners covered it with cardboard. The cats were referred for behavior consultation. Both cats were treated with fluoxetine (Reconcile) at 0.5 mg/kg once daily and Feliway diffusers were placed on each side of the barricade. Spencer was confined to the sun room with food, water, and toys near the door. Maggie had access to the home with her food, treats, and toys on the hallway side of the barricade. Spencer was allowed time to roam in the home, but as Maggie could not be taken into the sun room without becoming agitated, she was confined when Spencer was given access to the home. The cats were given treats and play time near the door. Maggie was reactive when she could see Spencer and Spencer was reactive following Maggie's aggressive display. Gradually, over several months, openings were made in the cardboard which allowed the cats to see each other. Initially, a "mouse hole" was cut in the barricade so the cats could observe each other eating treats during a daily desensitization and counterconditioning session. Ultimately the cats were able to be reunited after 12 months of behavior modification and were weaned off medication after 1.5 years. Visualization of outdoor stimuli was permanently prevented with window coverings and by removing perching areas.

Pain-induced and irritable aggression

Even the most sociable and docile animal may exhibit aggression when it is in pain. Similarly, if a pet is irritable, uncomfortable, or impaired there may be an increased incidence of aggression. Metabolic disorders such as liver disease, pancreatitis, renal disease, endocrine disorders, CNS disorders, or sensory decline might lead to irritable aggression (see [Chapter 6](#)). Because pain monitoring is primarily a subjective assessment in cats, it may be difficult to separate irritable from pain-induced aggression accurately. Handling or the anticipation of handling when a person approaches or reaches for a cat that is painful or ill might result in aggression. This problem may also occur if pain is induced by pulling the cat's tail or accidentally stepping on the cat or by grooming or nail trimming, especially if the cat is already painful or uncomfortable. Cats that are presented for recent onset in aggression should be examined for underlying medical conditions, including pain.

Pain or discomfort inflicted during restraint is neither effective nor humane for gaining control of pets or modifying behavior, especially since the pet will quickly realize which people are associated with the pain. The use of a painful or uncomfortable correction can intensify aggression

that already exists or add aggression to the list of the pet's behavior problems. At the very least it is likely to lead to fear and avoidance behaviors.

Diagnosis and prognosis

Sometimes the diagnosis is straightforward: the cat experiences pain and reacts aggressively. The cat might hiss, snarl, and growl, or bite people if it perceives they are the cause of the pain. It is important to remedy the situation for both humane and welfare reasons for the cat as well as to prevent the problem from escalating. The cat that learns that biting accomplished its goals (i.e., stopped the painful interaction) might then use aggression when similar interactions arise in the future, even if the pain is resolved. In addition, in order to be able to proceed with routine care such as claw trimming, home dental care, medicating, and grooming, a positive association must be made with handling. Degenerative disease, trauma, and illness that lead to pain or increased irritability may be difficult to identify; therefore, the history plus a full medical workup are essential for all aggressive cats. If pain is suspected, a trial with a pain control medication might be warranted.

Management and treatment

If possible, it is best to avoid manipulation of a cat in pain. However, this is not always practical, especially when medications may need to be applied or physical therapy utilized. Thus, the initial approach must be to control the pet calmly and safely to reduce danger to the handler, avoid eliciting pain, and treat the pain, while implementing desensitization or counterconditioning over the long term to increase the cat's tolerance of being handled ([Box 21.3](#)).

Prevention

Handling exercises performed with kittens may help raise the cat's threshold for pain-elicited aggression. These can be done at feeding time or when giving treats. While the pet is being hand-fed its food or treats, the owner can gently handle all parts of the pet's body. As days go by, the intensity and variety of handling should increase. Grooming, claw trimming, and teeth brushing should occur during these exercises. The best way to prevent pain-induced aggression from a cat that has been hurt is to anticipate the problem and handle the pet in a manner that minimizes pain. Veterinarians should also place increasing emphasis on the use of medications, sedation, and anesthesia that minimize or alleviate pain.

Box 21.3 Managing feline pain-induced aggression

- Eliminate or reduce the source of pain or irritability (medical therapy/therapeutic diets/drugs)
- Modify treatment to make it more comfortable
- Handle the patient gently and implement low-stress handling techniques (see [Chapter 23](#))
- Promote predictable interactions by training desired responses with positive reinforcement
- Implement desensitization and counterconditioning to accustom the cat gradually to handling
- Avoid punishment

CASE EXAMPLE

Zeke was an 18-month-old, neutered male domestic (American) shorthair cat who received a painful bite wound over his right shoulder. As part of the treatment, the owner was instructed to wear latex gloves and cleanse the area gently three times daily and was given a nonsteroidal anti-inflammatory drug with instructions for off-label use to minimize pain. To make Zeke less anxious about having the shoulder treated, the owner gave him a small piece of tuna 15–20 times each day as she touched the opposite shoulder and said “good boy.” When she treated the wounded shoulder, she gave him a large piece of tuna and repeated “good boy” as she applied the compress, which allowed for successful treatment.

Territorial aggression

Individuals of many species engage in aggression to expel or keep other individuals off their territories and cats are no exception. Cats recognize colony versus noncolony members and aggression is typically exhibited by members of a cat “colony” toward unfamiliar cats that are not members of the colony.¹⁴ With persistence some cats may be integrated into an existing colony but this is a gradual process that usually takes many interactions.^{14,15} The same is likely to hold true, therefore, when introducing a new cat into a household where one or more cats are already present. Therefore, the underlying cause of territorial aggression is the social tension that arises from the intrusion of a new cat.

Territorial boundaries may vary greatly among cats, with some attempting to defend only a room in their home and others protecting a much larger area. Territorial aggression occurs in both females and males but can be particularly intense during the breeding season when males may protect extensive boundaries. The territorially aggressive cat may take a slow, steady approach as it stalks or it may immediately and aggressively chase the other cat. The focus on the intruder can be intense, and the cat can be very determined in pursuing and attacking the newcomer. Defensive displays by the intruder or new pet in the home may include hissing, growling, yowling, and piloerection. Though classically the victim is a cat, the target of aggression may be a person, child, or dog. Generally the attention cats give to birds and small animals is predatory and not territorial.

Territorial aggression may be closely associated with fear-related aggression in which the cat elects to maintain and defend its territory but might have retreated from the stimulus if the encounter occurred in unfamiliar territory. Fear and anxiety are likely factors when unfamiliar cats are introduced into the home since the change in environment and the presence of an intruder likely cause fear and anxiety (as in cats with redirected aggression). There may also be hormonal/sexual influences, especially if any of the cats are intact. Cats that are highly aroused (whether territorial or fearful) by the arrival of a new cat into the home and separated into another room might also be at risk for redirected aggression toward family members or other pets in the home.

The aggression to strangers or new family members (baby, new spouse) may also be fear-related or territorial. They might be differentiated by noting the cat’s postures. With

fear-related aggression, the cat might more likely try to avoid the encounter or display aggression when it cannot avoid the person or other cat. The fearful cat generally growls and hisses at a safe distance or from a hiding place, displays fearful body postures, may run away or hide if approached, and attacks only if cornered, surprised, or handled. The territorially aggressive cat might be bolder and actively approach or lunge at the individual. This may be accompanied by growling and hissing, batting with forepaws, or biting, even if the visitor stands still or attempts to move away. However, some fearful cats may also be bold once they have learned that aggression is a successful way to control fear-evoking situations. With either type of aggression, the goal would be to minimize exposure and avoid agonistic encounters so that the cats might gradually come to accept a newcomer as part of the social group or colony.

Aggression between cats in a household

Aggression between cats living in the same household may range from mild agonistic displays to fights that cause serious injury. These cats may be new acquaintances or long-term associates. Aggression between housemate cats may be diagnosed as territorial, fear-related, redirected, pain-induced, or hormonally related aggression.

When a new cat is introduced to the home, aggression may have territorial and/or fear-related components. Genetics and previous social experience with other cats play a role in how one cat may react to new cats. While cats often choose to avoid social altercations by maintaining social distance, cats that are bolder, confident, or outgoing may display offensive threats to the new cat. In the confined area and narrow hallways of a home, avoidance is not always possible so aggression becomes more likely to occur.

Aggression might also arise between cats living in the same household, where there had been little or no previous history of aggression; and a single event such as with redirected aggression may have altered their formerly stable relationship. Increased conflicts may arise acutely or gradually when there has been a change in the social group (people or animals becoming a part of the household or leaving the household), or when there have been major changes to the environment such as moving, or more subtle changes, such as where the cats sleep, eat, perch, or eliminate. Medical problems causing pain or irritability may alter the way the cat interacts with other cats in the home and can lead to aggression. As cats age and mature, their relationships may change. It is also not unusual for aggression to arise when a cat has been out of the home and then returns (e.g., from a groomer or veterinary hospital). The cat that remained in the home may be responding to some alteration in the way the cat looks, acts, or smells, which prevents familiar identification. Mild agonistic encounters may be easily resolved, particularly if there are enough perches and hiding places for the cats to use in order to avoid interactions while they again “recognize” each other and re-establish a compatible relationship. Spontaneous recovery may take anywhere from a few hours to several weeks for some cats. Some may never recover without a formal reintroduction program of desensitization and counterconditioning in much the same way as a new cat is introduced into the household.

Diagnosis and prognosis

When confronted by an intruder or perceived intruder into the household or on to the territory (another cat, other animal, or perhaps a person), aggression displayed by the household cat may initially be territorial in nature, although there may be aspects of fear, defensive, and learned aggression. In a study of 128 households with multiple cats and 124 households with a single cat, about 50% reported fighting when a new cat was introduced into the home. Ongoing fighting was associated with aggressive or unfriendly behavior by either the new or resident cat at the first meeting (e.g., scratching and biting) or outdoor access. In most cases it was the new cat that initially displayed fear or aggression, while the resident cat was more likely to try and initiate play.¹⁶ If the resident cat is territorial, fearful, or has not been adequately socialized to other cats, it may hiss, growl, chase, swat, and attack the newcomer. If either cat then runs to evade the other, this can result in aggressive pursuit and increased fear by the one being pursued.

The likelihood of a favorable outcome and eventual harmonious coexistence depends on the initial introduction, how long the cats have been agonistic toward each other, the severity of the aggression, the social experience of each of the cats, and their temperaments.

Management and treatment

In the wild, colony size is determined primarily by availability of food resources which are, of course, not likely to be an issue in a family home. However there are physical restrictions on space and limited options for dispersal. The locations of resources such as food, resting areas, and litterboxes can be used strategically in a behavior modification program.

Aggression between housemate cats poses unique challenges and may be quite difficult to manage or resolve. Initially the cats must be separated to prevent injury and further damage to their relationship while a program of gradual reintroduction is implemented. Desensitization and counterconditioning principles should be followed: the cats should not be allowed to “fight it out” as these fights rarely settle conflicts and may make the situation worse. In some instances, the most expedient and safe way to end the conflict is to remove one of the cats from the household.

Treating aggression toward another cat that is being introduced (or reintroduced) should begin with confining the cats in separate areas, so that their ability to see, smell, or hear each other is reduced. Cats communicate by leaving pheromones (skin secretions, urine) on surfaces within their living areas. These chemical messages are both communication for the other cat and a familiarizing odor that might reduce anxiety for the cat itself. Each cat should have the opportunity to perceive the odors and pheromones first without having to respond to body postures and aggressive displays. This allows the new or visiting cat to leave semiochemical messages for the cat residing in that location. Giving each cat a room and allowing them separately to explore common areas of the home would be a good starting point but if the house can only be divided into two parts, the cats will need to be safely rotated, preferably without seeing each other. This also ensures that the cat is familiar

with all areas of the home and has quick access to hiding places or retreat strategies. Cats may be groomed or gently towed with a cotton cloth, including the chin, paws, and perianal regions, which can then be used to groom the other cat while giving food rewards. This should be done cautiously in case the cat being wiped becomes aggressively aroused at the other cat's odor.

The door that separates the cats provides opportunities for the cats to practice either chronic reactivity or peaceful coexistence. If the cats are agitated and aroused by the presence of the other cat behind a door, then consider a poorer long-term prognosis for harmonious resolution. The area which separates the cats may be thought of as the stage for desensitization. Provide each cat with necessary and desired resources on each side of the desensitization zone. The doorway may be modified to allow varying degrees of visual desensitization or openings to allow tactile desensitization. Owners can be very resourceful in making modifications, ranging from covering panels of glass on French doors to restricting visual reactivity to using solid doors which are modified or elevated to allow visual or tactile exchanges. Screens, baby gates, or other barriers may be utilized. The sounds and odors of each cat will be detected readily by the other through most doors. The provision of food, treats, toys and resting areas for each cat on both sides of the doorway allows the cats to be gradually desensitized to the presence, sight, and sound of the other one. Toys may be introduced which are attached to a string so that when a cat manipulates a toy, the attached toy is moved in the other cat's space. In this way each cat may become desensitized to the motions, activities, sounds, scents, and presence of the other. Observation of the cats' willingness to eat, play, or sleep near the doorway indicates habituation. Provision of small amounts of highly desired treats such as fresh fish, meat, shrimp, canned foods, or for some cats, sweets such as whipped cream will allow classical counterconditioning to the presence of the other cat, rather than just tolerance. Conditioning can take months and may require considerable patience and time on the part of the family. Aggression that occurs when a cat returns home from the veterinary hospital or groomer and cases of redirected aggression involving two cats in the home are treated in the same manner. **Box 12.9** (client handout #10, printable version available online) describes fear in cats and its modification through desensitization and counterconditioning. The clinician should monitor all phases of the process and adjust the progress of the program accordingly. The cats should be observed for signs of stress, fear, vigilance, or arousal.

If the cats are segregated and only meet occasionally for an aggressive event, the relationship will deteriorate over time and the cats will become more aroused and reactive at the sight of the enemy. So it is important that the cats have positive and pleasant experiences during all exposures, including both incidental or planned training situations.

Drugs may be beneficial, not only to reduce the arousal and agitation of the more reactive cat, but also to promote learning which requires a calm, settled cat. The victim cat may benefit from medication for the same reasons. Defensive signaling and escape behaviors tend to elicit chasing and aggressive attacks from the bolder cat in these situations. Reducing the fear and anxiety and increasing the confidence

of the victim cat are therefore important aspects of the therapeutic program. Providing sufficient climbing, hiding, and perching areas (three-dimensional space) may allow the victim the opportunity to prevent conflicts and display less anxiety. Electronic cat doors (SureFlap, Cambridge, UK), which are opened only by the cat wearing the collar that activates the door, are also a means of allowing the victim cat the opportunity to access the entire home but also to retreat to a safe, secure area. Synthetic feline facial pheromones (Feliway) applied to prominent structures throughout the cats' environment might be calming for the reactive cat as well as the victim (see [Chapter 9](#)).

Over time the goal is gradually to expose the cats to each other in very controlled situations. This can be done with the cats in carriers or controlled with a harness and leash at opposite ends of the largest room or longest hallway in the home. During the sessions, the cats are fed highly palatable food or engaged in play. During subsequent sessions, the cats are gradually brought closer together. By withholding food and reserving the best rewards for training sessions, each cat may learn to associate the presence of the other cat with food and play, rather than fear and anxiety. Once the cats are showing no tension at close proximity to each other during the sessions, the owner can attempt to allow them to have freedom in the same room. Initially, and until there is believed to be minimal risk for injury, this should only be allowed when the owner is present in the home. Training the cats to a few simple commands for rewards and clicker training can help to ensure that positive interactions are reinforced while avoiding those that are negative. When the cats are finally allowed to roam freely in the home, at least two feeding stations and litterboxes should be available. They should be placed so that a cat will not be trapped or surprised when using either. Placing a bell on the collar or harness of the more aggressive cat may provide the victim cat with audible cues to the other's location so the cat may retreat rather than engage in a confrontation. Cats must be given the opportunity to observe a range of communication from the other cat and be able to adjust. In stable multicat homes the cats reconcile their disputes with feline aloofness and casual disregard rather than violent displays.

Prevention

Adequate early socialization can help reduce the occurrence of territorial and fear-related aggression in most cats. However, certain individuals are genetically less social and may be more difficult to acclimate to a new member of the household. In all cases, it is best to have an initial separation period when introducing a new cat to a household. Establish separate confinement rooms. Initially, one cat can be given freedom of the entire home, while the second is kept in its own room. The situation is then reversed. This allows the cats to explore the area, determine escape routes, and deposit natural pheromones. The cats should be observed for anxiety and reactivity during these exchanges as the goal is calm, relaxed behaviors. Preventive steps are similar to the approach for treatment but will vary in duration and intensity and may take hours to weeks. If done properly, it will seem as if all the steps were superfluous and unnecessary since the cats will adjust seamlessly.

CASE EXAMPLE

When the family's elderly male cat died, they decided to adopt a 4-month-old female to keep the remaining 5-year-old female cat, Carley, company. As the owner carried the kitten into the home, Carley immediately focused on the kitten, walked deliberately toward it, yowled, and jumped to attack it in the owner's arms. The owner turned and was badly bitten on her leg by Carley. The kitten was confined to a bedroom, and during the following 2 weeks Carley sat outside the bedroom door, hissing and rattling the door. Two attempts to introduce the cats resulted in Carley immediately hissing or growling and attacking the kitten. The kitten was becoming increasingly more anxious and exhibited some hissing and withdrawal when the owners entered the room in which she was confined.

Carley was given buspirone (5 mg every 12 hours) and the cats were separated so that Carley was unable to get near the door to the kitten's confinement room. During the second week, each cat was allowed to roam in the house while the other one was confined. By the end of that week, both cats had started to settle down and acted much less anxiously. During the third week, the owners started desensitization and counterconditioning exercises. Body harnesses and leashes were placed on the cats and they were taken to opposite ends of a long hallway and fed small pieces of chicken for 15 or more minutes, at least once a day. Every few days, the distance between the cats was decreased by small increments. After 4 weeks, the cats could be fed about a meter apart on a leash without any sign of aggression or anxiety. The exercises were carried out by giving both cats treats in various areas of the house over the following 2 weeks. The final step was to allow the cats some time together after feeding under close supervision. After 2 weeks the cats could be housed together without conflicts and the buspirone was gradually reduced and discontinued.

Pathophysiological aggression

Pathophysiological aggression is aggression that results from underlying physiologic or physical abnormalities and may not fit neatly into the other aggressive behavior categories already described. These might include abnormal neurotransmitter/receptor activity, CNS anatomic abnormalities (genetic, congenital, acquired), neoplasia (CNS tumors), metabolic disease states (hepatic encephalopathy, endocrine disorders), infections (rabies, feline leukemia virus, feline immunodeficiency virus), trauma (CNS injury), and toxins (lead, pesticides, illicit drugs), and cognitive dysfunction in senior pets. A pet's behavior may be affected during any developmental period from prenatal to adulthood but is most susceptible to pathological outcomes during the prenatal period and the first few months of brain development.

Assessment of behavioral anomalies should include a complete history and interview, and response to a behavior therapy program, which includes management, behavior modification, and drug therapy where indicated. These conditions may arise at any age, and may have either a chronic or an acute onset. Cats with feline hyperesthesia syndrome may show aggression when handled or during episodic reactivity and may show characteristic skin rippling or tail twitching. In addition, excessively intense responses to stimuli, impulse dyscontrol, chronic anxiety, compulsive disorders, and inability to form stable social relationships with humans or other cats may be due to behavioral

pathology, which could have genetic or environmental causes (e.g., early mental or nutritional deprivation, insufficient or inadequate maternal care, handling and socialization, traumatic previous experience). Chronic or acute stress also plays an important role in the development of many feline health and behavioral disorders.^{17,18} Since these forms of aggression fall outside of what would be considered normal feline behavior they often require psychotropic medications such as SSRIs to modify neurotransmitters and receptors, and to reduce anxiety.

Social status-related aggression (social stress)

The appropriateness of describing dominance or status as a motivation for aggressive behavior is a subject of debate in dogs (see [Chapter 20](#)). Cats are social animals that live in groups where relationships are generally mediated by signals and actions to avoid aggression.¹⁴ Rather than fighting, it is more common for cats to defer to or avoid a cat that already has a resource, whether a resting area, litterbox, or access to a passageway (first come, first served).¹⁹ On the other hand, a social asymmetry helps to maintain healthy social relationships without the need for conflict. The dominant cat will approach another cat and stare, and stiffen the legs, with ears erect and rotated and an upright base of the tail, while a subordinate would defer or avoid rather than fight.¹⁴ Although dominant cats would have priority access to resources, including resting areas, food, water, and perhaps litter, a high-ranking cat does not necessarily engage in aggression over a resource if it does not want it at the time.¹⁴ However, cats that threaten individuals over resources and use aggression to displace other cats as they move through the group (i.e., bullies) might be asserting their status or dominance.^{14,19} Similarly, when owners try to pat or move a cat that aggressively resists with assertive posturing and ears up and rotated laterally (rather than fear posturing), the aggression might be due to social status.²⁰ Once engaged, cats are not skilled at peaceful resolution, so fighting may quickly intensify. Thus a cat that displays bold and assertive posturing toward people or other cats accompanied by aggression to acquire or maintain resources might be given a diagnosis of status-related aggression, dominance aggression, competitive aggression, or social stress-related aggression.^{19,21,22}

While behaviorists will continue to debate the rarity or even existence of dominance-related aggression, many practitioners are still accustomed to using this terminology. However, the diagnosis should only be a consideration in specific and infrequent situations at best.

Diagnosis and prognosis

Cats with social status aggression have a confident temperament and assert their status by biting or threatening. These cats might approach and initiate the interaction. Expressions of the cat's assertiveness may also be exhibited as biting during stroking, when lifted or approached, or when the owner attempts to move the cat from a counter or piece of furniture. Assertive displays, attempts to control the environment by blocking access to doorways, and using aggression rather than refusing to be moved from perches or sleeping areas may be displays of social status. The problem may have

both innate and learned components, and the prognosis may be guarded.

Management and treatment

The approach to treatment is similar to other forms of aggression in that initiating factors and stimuli will first need to be identified and avoided. Treatment should then focus on training alternative acceptable behaviors using rewards. One advantage in training confident cats is that, since they are not motivated by fear, they might be more easily trained to commands or cues if the resources the cat desires are used for rewards. Therefore, a predictable pattern of interaction (learn to earn, structured interactions), which only allows the cat rewards for appropriate (desirable) behaviors, can teach the cat behaviors that might be used to manage problems that might arise. This might include "go to a location" (room, crate, bed), come, sit, leave it (i.e., moving away from an area) or play time. Owners must train and reward at times when the cat is not aroused and is motivated by a reward. Clicker training might also be particularly useful for these cats. Once trained, these commands might then be used to control the cat. By watching and reading the cat's behavior, anticipating problems, and using commands to control situations, undesirable behavior can be preempted. "Come" and "sit" commands can be used to move a cat to away from a chair or counter, or get it to go to its room.

Punishment and confrontation will quickly raise the cat's arousal and add a defensive component to the aggression as these cats are more likely to fight than back away. When aggression is between cats in the home, separating the aggressor from the other cat, giving it an area with its own resources, and gradually reintegrating the cats with reward-based training and counterconditioning may be effective. A collar or harness with a noisy bell may facilitate tracking these cats by both human and feline victims. (See aggression between cats above) Cats that are bullies, use aggression to control resources, and do not avoid or defer to other cats may be best removed from the social group.

Hormonally mediated aggression

Aggression may be normal, adaptive, and appropriate in some contexts. For example, a queen will protect her offspring by showing aggression. Therefore a cat which is normally affiliative and affectionate may display aggression to familiar people or animals approaching the kittens or nest area. This type of aggressive activity is believed to be a function of the hormonal state of the female during lactation as well as the presence of the young. Treatment for maternal displays of aggression should include avoiding approach when the queen is in her nest. Highly palatable food rewards for the queen can be offered by familiar, less threatening people at a distance which doesn't evoke a reactive response. If the queen can be encouraged to leave the nest or when she leaves the nest voluntarily, favored rewards (food, treats, toys) should be given. If the queen can be occupied away from the litter, the kittens can receive the handling and attention that are beneficial to their development (see [Chapter 2](#)).

Depending on the severity of the mother's reactivity, it may be best to delay attempts at behavior modification until the kittens are less vulnerable since the queen's reaction will be tempered as her kittens age and are less reliant on the mother. Since kittens may learn by observation of their mother's interactions with people, it is best to avoid evoking an aggressive response.

Males will display aggression to other males, especially at the peak of sexual and social maturity (2–4 years of age). The aggressive interactions involve posturing, threatening, and fighting. These elaborate and ritualized threat displays are particularly common and dramatic during the mating season. The behaviors are facilitated by postpubertal androgen secretion and are largely prevented or eliminated by castration.²³

References

1. Bamberger M, Houpt KA. Signalment factors, comorbidity, and trends in behaviour diagnosis in cats: 736 cases 1991–2001. *J Am Vet Med Assoc* 2006;229:1602–6.
2. Amat M, Ruiz de la Torre JL, Fatjo J, et al. Potential risk factors associated with feline behavior problems. *Appl Anim Behav Sci* 2009;121:134–9.
3. American Association of Feline Practitioners (AAFP) Feline behavior guidelines. Accessed online at http://www.catvets.com/uploads/PDF/Feline_Behavior_Guidelines.pdf.
4. Macdonald DW, Yamaguchi N, Gillian K. Group-living in the domestic cat: its sociobiology and epidemiology. In: Turner DC, Bateson P, editors. *The domestic cat: the biology of its behaviour*. 2nd ed. Cambridge: Cambridge University Press; 2000. p. 96–115.
5. Barry KJ, Crowell-Davis SL. Gender differences in the social behavior of the neutered indoor-only domestic cat. *Appl Anim Behav Sci* 1999;64:193–211.
6. van den Bos R. Post-conflict stress-response in confined group-living cats (*Felis silvestris catus*). *Appl Anim Behav Sci* 1988;59:323–30.
7. Borchelt PL, Voith VL. Aggressive behavior in cats. *Compend Contin Educ Pract Vet* 1987;9:49–56.
8. Mellen J. Effects of early rearing experience on subsequent adult sexual behavior using domestic cats (*Felis catus*) as a model for exotic small felids. *Zoo Biol* 1992;11:17.
9. Seitz PFD. Infantile experience and adult behavior in animal subjects: II. Age of separation from the mother and adult behavior in the cat. *Psychosom Med* 1959;21:353.
10. Association of Pet Behaviour Counsellors. Annual review of cases. Available online at: UK, www.apbc.org.uk; 2005.
11. Chon E. The effects of queen (*Felis silvestris*)-rearing versus hand-rearing on feline aggression and other problematic behaviors. In: Mills D, Levine E, editors. *Current issues and research in veterinary behavioral medicine*. West Lafayette, Indiana: Purdue University Press; 2005. p. 201.
12. van den Bos R. The function of allogrooming in domestic cats (*Felis silvestris catus*); a study in a group of cats living in confinement. *J Ethol* 1988;16: 1–13.
13. Amat M, Manteca X, Le Brech S, et al. Evaluation of inciting causes, alternative targets, and risk factors associated with redirected aggression in cats. *J Am Vet Med Assoc* 2008;233:586–9.
14. Crowell-Davis SL, Curtis TM, Knowles RJ. Social organization in the cat: a modern understanding. *J Feline Med Surg* 2004;6:19–28.
15. Wolfe R. The social organization of the free ranging domestic cat (*Felis catus*). University of Georgia: PhD dissertation; 2001.
16. Levine E, Perry P, Scarlett J, et al. Intercat aggression in households following the introduction of a new cat. *Appl Anim Behav Sci* 2005;90:325–36.
17. Westropp JL, Buffington CA. Feline idiopathic cystitis: current understanding of pathophysiology and management. *Vet Clin North Am Small Anim Pract* 2004;34:1043–55.
18. Stella JL, Lord LK, Buffington CA. Sickness behaviors in response to unusual external events in healthy cats and cats with feline interstitial cystitis. *J Am Vet Med Assoc* 2011;238:67–73.
19. Beaver BV. *Feline behavior: a guide for veterinarians*. 2nd ed. St. Louis: Saunders; 2003. p. 142–3.
20. Curtis TM. Human-directed aggression in the cat. *Vet Clin North Am Small Anim Pract* 2008;38:1131–43.
21. Heath S. Aggression in cats. In: Horwitz DF, Mills DS, editors. *BSAVA manual of canine and feline behavioural medicine*. 2nd ed. Gloucester: British Small Animal Veterinary Association; 2009. p. 223–35.
22. Horwitz DF, Neilson JC. *Blackwell's five-minute veterinary consult clinical companion: canine and feline behavior*. Ames, IA: Blackwell; 2007.
23. Hart BL, Cooper L. Factors related to urine spraying and fighting in prepubertally gonadectomized cats. *J Am Vet Med Assoc* 1984;184:1255–8.

Recommended reading

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| <p>Crowell-Davis SL, Curtis TM, Knowles RJ. Social organization in the cat: a modern understanding. <i>J Feline Med Surg</i> 2004;6:19–28.</p> | <p>Curtis TM. Human-directed aggression in the cat. <i>Vet Clin North Am Small Anim Pract</i> 2008;38:1131–43.</p> |
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Terminology, behavioral pathology, and the Pageat (French) approach to canine behavior disorders

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Introduction

The definition and classification of behavior problems are among the main unsolved issues in the field of veterinary behavioral medicine. From a practical perspective, the availability of a well-defined terminology and classification system has three benefits. First, it allows for better communication between practitioners and behaviorists. Second, it helps to compare the outcomes of different research projects. Finally, it provides general practitioners and students with more accessible and ready-to-use protocols of intervention. Nevertheless, the construction of a structured diagnostic system for behavior problems faces many methodological and conceptual difficulties.

Classification is a process by which complexity is organized into a list of discrete and well-defined categories according to pre-established clinical signs. Clinical signs and symptoms could be defined as the simplest description of a particular aspect of the animal's behavior or physiology. In behavioral medicine, clinical signs come from three different sources: (1) owner's descriptions; (2) clinician's direct observation of the behavior (i.e., either in person or by electronic

recording); and (3) results from the medical examination, including blood workup and other diagnostics. Standardizing the extraction of information is a burning topic in the field of veterinary behavioral medicine. Compared to human psychiatry, there are still very few diagnostic tools, like scales and questionnaires, which have been fully tested for reliability and validity.

Syndromes are clusters of clinical signs that statistically occur together. One example could be anxiety and its associated physical and behavioral signs. Even though some basic behavior patterns are consistently observed from one case to another, the behavior of animals is by definition extremely rich and variable as a result of the interaction of the many factors that influence its expression. Two animals may fit within the same category for one particular dimension of behavior but still show a very different profile in terms of other dimensions of behavior and temperament traits.

Another fundamental discussion regarding the idea of classification and diagnosis is related to the interpretation of behavior problems as normal adaptive responses, or alternatively as dysfunctional conditions. Defining the boundaries between normal and abnormal behavior is a very difficult and controversial topic not only in veterinary behavioral

medicine but also in human psychiatry. Language is a very important matter so that using terms like clinical signs, symptoms, syndromes, or diagnoses could indirectly lead to the assumption that we are in fact dealing with pure pathological conditions. For all these reasons, many authors support a more open and flexible way of categorizing behavior problems which takes into account the natural variability of behavior and the fact that a behavior problem may or may not be related to an underlying dysfunctional state.¹

A good example of the aforementioned elements of discussion is a group of problem behaviors in dogs that can be broadly termed as aggression toward family members. A review of the literature on this subject demonstrates that each author may use particular classifications and terminology.² In some cases, differences are just related to the words used to describe more or less the same conditions, whereas in others, deeper discrepancies are found regarding the biological interpretation of this behavior problem. Indeed, owner-directed aggression has been linked to different underlying causes, from a hierarchical conflict between the dog and its owners to simply an active avoidance reaction in contexts of conflict. Further, for some authors these forms of aggression are mostly considered an expression of normal behavior, whereas for others, they are often linked to a pathological state.

Another example of the difficulties in classifying behavior problems comes from a very interesting experience organized during the 5th International Veterinary Behavior Meeting (Minneapolis, 2005). An international group of experts was asked to characterize a dog showing a problem of self-mutilation of the carpal area. The problem appeared only during the owner's absence. The clinical case was termed by different participants as a stereotypic behavior, a compulsive disorder, and a separation anxiety with mutilation as a main clinical sign.

Some years ago a comprehensive system for the classification of behavior disorders in dogs was developed by French colleagues based on the analysis of more than 11 000 clinical cases. This approach partially follows the philosophy of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM)³ system for the diagnosis of mental disorders in human beings, which itself is in draft for a fifth version (DSM-5) at the time of writing. Basically a list of well-defined and discrete categories of behavioral disorders is offered based on the observation of specific clusters of signs and symptoms. Each diagnostic category is considered the result of an underlying dysfunctional state (see glossary, Table 22.1). This assumption is reflected in the terminology used (i.e., sociopathy, hypersensitivity-hyperactivity (HS-HA) syndrome, Cocker spaniel dysthymia) as well as in the fact that psychotropic drugs are included in the treatment for the vast majority of disorders. Similarly to the DSM system, disorders are clustered in sections according to the patient's age. One patient can show more than one of these conditions together. In addition to classifying behavior problems, the Pageat or French approach presents an alternative pharmacopoeia in terms of recommended drugs, as well as doses and indications.

All of the following terms, diagnoses, and treatments are attributed to Dr. Patrick Pageat and are included here for completeness and for the exposure of our readers to alternative approaches to behavioral conditions. The authors would

Table 22.1 Glossary of terms used in the Pageat (French) approach

Bulimia	Conditions of increased food intake due to an emotional disorder. Pageat links bulimia to states of either permanent anxiety or chronic depression
Deficitary sign	Any clinical sign that represents a decrease in social interactions, communication and motivation
Depressive state	A reactive state characterized by a diminished receptivity to stimuli and a spontaneously irreversible inhibition
Dysthymia	A state characterized by sudden fluctuations of mood, impulsiveness, stereotypes, a lack of social inhibition, sleep disorders, and feeding disorders
Encopresis	Defecation in the resting location during a period of rest
Enuresis	Urination in the resting location during a period of rest
Normothymics	Mood stabilizers
Potomania	Psychogenic polydipsia
Productive sign	Any clinical sign that appears or increases its normal frequency or intensity
Antiproduktive sign	Any clinical sign that decreases its normal frequency or intensity

like to thank Dr. Pageat for allowing his work to be reproduced in this book. In general, neuroleptics are more often recommended and doses and indications of commonly prescribed drugs might also be different. Clinicians must use their own judgment regarding applicability of this information to their clients and patients.

The Pageat (French) approach to behavior counseling

The main purpose of this chapter is to review part of this alternative approach, including some of the scales developed to assess the patient's behavior. All the information in this chapter has been adapted from Pageat.⁴ Dr. Pageat's approach to senior pet behavior problems can be found separately in Chapter 13. Note that the diagnoses and treatments reported here are based on Dr. Pageat's research and writing.

Scales

Clinical ethology consultations should be viewed as having the same objectives as consultations conducted within all other clinical medical fields. They are concerned with recognizing signs that will help us to categorize the different clinical conditions, regardless of whether they are considered pathological or just an expression of normal behavior. The only specificity of our discipline lies in putting value upon the interview with the animal's owners with a view to establishing the diagnosis. This interview process is the point at which inexperienced clinicians frequently encounter problems, since owners have an unfortunate tendency to give redundant, unreliable, and even unbelievable histories. In

addition, since the owners are not usually well versed in ethology, they give information that has been subjected to cultural or emotional interpretation. In order to simplify the task for novice clinicians, a number of scales have been developed for data collection and assessment. In addition, the most significant presenting signs for each condition will be discussed.

In the interview, there is a degree of unearthing a certain amount of emotional motivation and impulse. The behavior consultation can thus be considered as the first step in developing a treatment program, since it will help to understand the functional perspective of the pet's behavior within its own species, and within the family structure as the animal perceives it. This act of playing down the emotional and anthropomorphic aspects of the history, along with a clear explanation of the facts, is essential to the therapeutic contract to be agreed upon with the family. This ensures their commitment and cooperation. The consultation is carried out in several stages, but the order may differ from what is discussed below. For example, the physical examination may either follow or precede the consultation process, and some stages may occur simultaneously.

It is both reassuring and useful for clinicians to have objective clinical tools to help them confirm their patient's state. On the other hand, these evaluation systems do not replace a close attention to clinical signs. Their role is to help us identify the stage of development, assess the progression of the behavior problem, and thus objectively assess the effect of the treatment.

Currently, three scales are utilized that have been partially validated in terms of reliability and sensitivity. The scale for assessment of old dogs, known as the Age-Related Cognitive and Affective Disorders (ARCAD) scale, is discussed in [Chapter 13](#).

Scale for evaluation of aggressiveness

For clinicians, assessing aggressive dogs constitutes a serious problem due to the complexity of a patient's clinical picture as well as the ethical and legal consequences of any errors in evaluation. This scale classifies aggression into three types of sequential organization. It measures the intensity with two types of measurement: a global aggressiveness index (Iag) and a social aggressiveness index (Ias), as well as the ratio of the two $(Ias/Iag) \times 100$ (expressed as a percentage). Three types of sequential organization are possible: type 1, growls; type 2, growls and attempts to bite; type 3, direct bite (without warning).

The global aggressiveness index and social aggressiveness index are calculated from the scores obtained in [Form 22.1](#) using the following eight parameters:

1. owner's attitude toward the dog
2. use of the dog
3. frequency of aggressive manifestations
4. gender
5. dog's age
6. bite description
7. reaction after owner's reprimand
8. area occupied by the dog.

The higher the score, the less favorable the prognosis. Thus, the fact that a dog has displayed aggression, followed by a

new threatening phase, is more unfavorable than withdrawing rapidly to hide, which leads to a score of 5 for the former and 1 for the latter. Each parameter should be determined by questioning the owners rather than allowing them to read the grid, to reduce the possibility of distorting the answers. People who are offered a questionnaire often tend to try to improve their image to the "pollster" or create empathy by supplying answers they think the clinician wants to hear.

The **Iag global aggressiveness index** evaluates the intensity and frequency of all of a dog's aggressive behavior within a social group (e.g., pack, family) and its interactions with a given person. A measurement will therefore have to be carried out for each member of a group. Approximations of the group may lead to underevaluation of the seriousness of the problem and distort the initial evaluation as well as the patient's monitoring. The global index is calculated thus:

$$Iag = [(A + C) \times F] \times (D + E)$$

The **Ias social aggressivity index** helps evaluate the intensity and frequency of aggressive behavior that is connected with maintaining hierarchical rank or the acquisition of a higher status. It is calculated thus:

$$Ias = (B + G) \times H$$

Finally, the ratio $(Ias/Iag) \times 100$ provides an estimate of the role of social phenomena in the genesis of aggressive manifestations. For each age and sex group, it is possible to give "normal" value ranges, i.e., corresponding to the values obtained from animals not displaying any affective behavioral symptoms and not living in a hierarchically unbalanced group.

It is also possible to compare the values obtained for a given patient with the norms of its age and sex group ([Table 22.2](#)). These measurements help to simplify differential diagnoses of behavioral changes associated with an aggressive case:

- In primary hyperaggressiveness (idiopathic or caused by lesions), aggression is type 3. Iag is strongly increased (35–40%) while Ias remains unchanged or decreases slightly (10–15%). The ratio between the indices is strongly decreased. This type of aggression is abnormal in sequence, intensity, context, and/or degree of inhibition.
- In reactional aggressiveness (while this type may be normal, it is essentially stage 1 of sociopathies), only the Ias index is increased. It may then represent 70–90% of Iag. Aggressions are of type 1 or 2 form.
- In secondary hyperaggression (instrumentalization of the previous types), both indices are increased and aggression is type 3. The ratio between the indices is often quite close to normal values.

This scale was published by Pageat in his text⁴ using 270 control dogs and 132 dogs suffering from behavioral disorders ([Table 22.2](#)).

Scale for evaluation of emotional and cognitive disorders (EDED scale)

This scale's objective is to measure emotional disruptions in all age groups. It is constructed using simple behavioral parameters that are modified by affective disorders. These parameters were selected following factorial analysis of the

Form 22.1 Evaluation grid of aggressiveness in dogs (client form #7, printable version available online)

		Score
A: Attitude of the owner towards the dog		
Frightened	4	
Apathetic, carefree	3	
Disappointed	2	
Anger	2	
B: Use of the dog		
Guard and defense	3	
Herding	2	
Companionship	2	
Breeding, show	2	
C: Frequency of aggressive manifestations		
Daily	5	
Weekly	4	
Monthly	3	
Very spread out	2	
Never*	1	
D: Gender		
Castrated male	3	
Spayed female	3	
Male	2	
Female	2	
E: Age of the dog		
>5 years	5	
1–5 years	3	
<1 year	1	
F: Description of the bite		
It releases but remains threatening	5	
It releases and goes away quietly	4	
The dog holds assertively (not shaking and tearing)	3	
It releases and hides	1	
G: Reaction after reprimand from the owner		
The dog defends itself	4	
It tries to flee	2	
It accepts punishment	1	
H: Degree of access of dog		
The whole house	4	
All rooms excepts the parents' bedroom	3	
The whole house except the bedrooms	2	
Limited to a few rooms	2	
*In this case, F and G should both receive a value of 1.		

Table 22.2 Normal values of aggressiveness indices: results of 270 dogs

Age	Gender	lag	las
0–1 year	Males	25–35	10–12
	Females	20–35	8–10
1–5 years	Males	20–25	10
	Females	30–45	10–12
5 years and over	Males	30–45	12–18
	Females	30–40	10–12

The chi-squared test confirms that there are significant differences at the 5% threshold for the value of the indices according to sex and age.
lag, global aggressiveness index; las, social aggressivity index.

history associated with each type of complaint. The scale was then validated by Pageat with a population of 190 controls and 215 dogs suffering from affective disorders. The result is an approach in four parts:

1. centripetal behavior: self-centered behaviors are termed centripetal. They include abnormalities of feeding, drinking, elimination, and sleep and somatoesthetic behavior
2. centrifugal behavior: behaviors resulting in a modification of the environment (i.e., exploration, aggression)
3. cognitive evaluation
4. somatic examination.

The presence of a behavior in the grid does not mean that it has to be pathological, but only that it is statistically associated with clinical pictures of emotional disorders. With each category, some selected types of behavior are taken into account and the different configurations that they may take are assigned an arbitrary numerical score between 1 and 5. The highest score is given to the poorest prognosis. The final mark, called the EDED value, is the result of adding all the scores together (Form 22.2 and Table 22.3).

Once clinicians have obtained this score, they can evaluate it using the interpretation grid (Table 22.3). As with the aggressiveness indices, the EDED score does not replace the clinical approach; it complements it, facilitates the differential diagnosis, and helps objectively evaluate the animal's progress during treatment. As with the other forms, the evaluator and not the owner should complete the form.

The ARCAD scale

The calculation grid of the ARCAD score was constructed according to the same rules as EDED (see Chapter 13). While the parameters that make up both scales are very similar, they can have different diagnostic meanings. Therefore, while the EDED scale helps evaluate dogs of all ages, the ARCAD measurement provides a better means of assessing problems that might be specific to the older dog. For example, old dogs can obtain an EDED score of the anxious type, while their ARCAD score suggests a temperament disorder. The EDED scale is not designed to assess mood disorders (see Chapter 13), which have a more discrete symptomatology in old dogs. Moreover, the ARCAD scale helps

discriminate affective disorders (emotional score) from cognitive disorders to determine if drugs such as selegiline might be indicated.

Specific therapies

In the field of veterinary behavioral medicine, most behavior modification techniques are aimed at improving the dog's reaction when exposed to stimuli triggering a problem behavior. These techniques are mainly based on learning principles and include desensitization and counterconditioning.

In addition to these techniques, which are described elsewhere in the book, a set of qualitatively different techniques is usually implemented by behaviorists following this alternative approach. The discussion of all these therapeutic options is beyond the scope of this book. Nevertheless, a brief description of some is now presented for a better understanding of the treatment protocols outlined below.

Cognitive therapies

Cognitive therapies are based on an indirect modification of problem behavior by introducing changes in the social and affective domains. The best example is what is called directed social regression. It is aimed to modify the perception of the dog about its hierarchical position within the family. Family members are instructed to behave in a specific and coordinated way in different daily situations that involve an interaction with the dog.

Another cognitive therapy is based on repeatedly presenting the dog with easy-to-solve instrumental tasks. This could be helpful to treat depressive and permanent anxiety states, where dogs have entered a vicious cycle by generalizing downfalls from one situation to another one.

In addition to cognitive therapies applied to the dog, interventions aimed to modify the family's perceptions and attitudes are also used.

Behavior disorders

The criteria used are, first of all, of a clinical and progressive nature, as we are actually trying to follow the usual path of development of these disease entities. Many of these pathologies seem to depend on the animal's stage of behavioral development, so this is an important aspect of the classification process.

The classification, arbitrary but with a logical base, should not obsess clinicians. The main objective is to have a correct symptomatic approach, which is the only means of understanding the condition, and put together a treatment. For each of the conditions described, the treatment generally requires both biological intervention as well as many of the behavioral techniques discussed elsewhere in the book.

Disorders appearing during puppyhood or adolescence

Sensory homeostatic disorders

In this category, we shall group both clinical pictures dominated by a hyperreactivity concerning one or several sensory

Form 22.2 Evaluation of dog's emotional and cognitive disorders (EDED scale) (client form #17, printable version available online)

Behavior type	Specific behavior	Score	Date	Score
Centripetal				
Feeding	Normal appetite			1
	Hyperphagia (with regurgitation and reingestion) ¹			3
	Anorexia/hyporexia			4
	Dysorexia (moving from hyper to hypo)			5
Drinking	Normal drinking			1
	Carries empty water bowl around (ritual) ²			2
	Chews at water without swallowing ³			3
	High-frequency drinking (documented)			5
Self-stimulatory	Normal cleaning behavior			1
	Excessive licking, nibbling ⁴			4
	Stereotyped nibbling, dizziness, turning on itself (or other stereotypies) ⁵			5
Sleep	Normal (or no change)			1
	Increase in sleep, hypersomnia ⁶			2
	Insomnia, during sleep (and hyposomnia) ⁷			3
	Wakes up shortly after falling asleep, anxiety at time of going to sleep (and restlessness) ⁸			5
Centrifugal				
Exploratory (scanning)	Normal			1
	Inhibited			2
	Frequent avoidance responses			3
	Increased, hypervigilant			4
	Oral			5
Aggression (defense)	No aggression or aggression stable (no increase or decrease)			1
	Irritation-related aggression			3
	Fear-related aggression			4
	Displays both fear and irritation aggression			5
Learned social behavior	Unchanged			1
	No submission response			2
	No self-control when playing			2
	Bites without growling			4
	Steals, does not drop stolen objects			5
Specific learned behavior	Same response capacity (allowing for disease or age)			1
	Arbitrary responses			3
	No response to previously learned behaviors			5
Physical exam ⁹	Normal			1
	Periods of tachycardia and/or tachypnea			2
	Diarrhea, colic			2
	Dyspepsia (and ptyalism)			2
	Increased emotional micturition			3
	Acral lick granuloma (and extensive lick alopecia)			4

Continued

Form 22.2 Evaluation of dog's emotional and cognitive disorders (EDED scale) (client form #17, printable version available online)—
cont'd

Behavior type	Specific behavior	Score	Date	Score
	Obesity			4
	High-quantity drinking and urination (PU/PD)			4
Total				

Centripetal, internal factors; centrifugal, external stimuli; PU, polyuria; PD, polydipsia.

¹Hyperphagia with regurgitation and reingestion. The dog eats rapidly, displays spasms, followed by vomiting. It then reingests what it has just expelled and resumes its meal. This behavior appears regularly (1 meal in 2).

²Carries empty water bowl around. The dog moves or carries its bowl toward one or several family members. This behavior stops as soon as the bowl is filled.

³Chews at water without swallowing it (dipsomania). The dog nibbles the water and spreads it around its bowl while swallowing very little.

⁴Excessive licking, nibbling. A dog that is licking or nibbling itself, then spontaneously stops.

⁵Stereotypic nibbling, dizziness. When there is licking or nibbling that does not stop spontaneously (the owners must stop the dog or divert its attention) or else dizziness or any other stereotypy (e.g., licking of the face, jumping, wandering).

⁶Increase in sleep, hypersomnia. When the duration of sleep is longer than the age norm (+25%).

⁷Insomnia, during sleep. Awakenings appear more than 90 minutes after going to sleep.

⁸Wakes up shortly after going to sleep, anxiety at time of going to sleep. The dog awakes in the 30–45 minutes following going to sleep. Prior to going to sleep the dog may display moans, excitement, and a search for contacts, as if it is afraid of going to sleep.

⁹In order to take the physical examination into account, all the manifestations observed must be scored and counted.

Table 22.3 Interpretation grid of EDED scores

EDED value	Interpretation
9–12	Normal state
13–16	Phobias
17–35	Anxieties
36–44	Emotional (thymic) disorders

systems associated with a lack of control of motor responses, and affective disorders ranging from phobia to depression. This highlights how both hyperproductive and deficiency states may be observed in these cases. Passing from one clinical form to another is often the rule. This is why we will focus on those problems that are most often the source of diagnostic difficulty.

Hypersensitivity–hyperactivity syndrome

Description

These dogs have motor activity that appears to be overdeveloped. They cannot keep still. They run, jump, and never stop playing. The activities have almost complete absence of structure. No sequential organization can be found and, in particular, the appeasement phase that follows the achievement of the consummatory act is rarely found. Even with apparently normal activities (ball play, predatory play), the comparison with “normal” subjects of the same age helps establish that the consummatory phase is extended, which most often leads to a new appetitive phase. Everything happens as if there was no “stop signal” at the end of the sequence. During play fighting, the lack of an “inhibited bite” is observed in puppies aged 2 months and over. In addition, the total duration of the wakeful periods appears considerably greater in the most developed cases. These dogs sleep on average 7½ out of 24 hours, which corresponds to a deficit of 30–50% of what is considered normal. Overall, the key element of this clinical condition is an extremely low

reactive sensory threshold. Patients respond to very weak visual, tactile, or auditory stimulation. Each stimulus triggers a characteristic motor response (hypertrophied and ill structured). Marked oral exploration is often observed. Some of these cases may meet the criteria for hyperkinesis or hyperactivity, discussed in [Chapter 14](#).

Diagnosis

Two stages can be defined based on the presence or absence of sleep disorders.

Stage 1

- Absence of bite inhibition with pups aged over 2 months (bite inhibition is expected to be normally acquired before 2 months of age)
- Inability to stop a behavior sequence after the consummatory phase, and reappearance of an appetitive phase
- Almost normal dietary satiety
- Hypervigilance reflected by behavior responses to stimuli continuously present in the animal's environment.

Stage 2 (stage 1 symptoms plus the following)

- Absence of dietary satiety
- Global decrease of sleeping time (<8/24 hours), without alteration of the cycles or presleep anxiety.

Differential diagnosis

It is necessary to distinguish between this syndrome and stage 1 deprivation syndrome, primary dyssocialization, and sociopathy.

Although the tendency to react excessively to stimuli may be common to HS–HA and deprivation syndrome, dogs with deprivation syndrome display behavioral responses of fear aggression or inhibited responses associated with displacement activities. In addition, dogs with deprivation syndrome acquire an inhibited bite and have normal mobility. These latter considerations must be taken into account to help

differentiate deprivation anxiety from dogs with a HS–HA syndrome and concurrent anxiety.

Differential diagnosis is based on two essential points that are characteristic of primary dyssocialization: the absence of an alteration in the total length of sleep and the existence of irritable and hierarchical aggression without the expression of a submissive posture. The bites inflicted by the pup on its owners are often the reason that the client seeks help, so it is necessary to assess all of the signs. During HS–HA syndrome, bites inflicted by puppies do not conform to a typical aggression sequence.

This is very different from what is seen in reactive-stage sociopathies, which are characterized by perfectly regulated aggressive sequences in response to specific triggers. The differential diagnosis with a sociopathy with secondary hyperactivity may be more difficult when the HS–HA has developed secondary hyperaggressiveness. It is possible to distinguish between the two by reviewing the development of the disorders, and by highlighting the existence of alterations in behavioral sequences in HS–HA.

Prognosis

This depends on the stage of development and the duration of the clinical picture. It is especially the age at which treatment is started that seems to determine the establishment of self-control. An analysis of therapeutic results from 120 dogs, as published in Pageat's text,⁴ relates to the juvenile period, but no particular age within this period. Conversely, subjects treated after the start of sexual activity respond less well to treatment, and good control of dietary behavior (dog continues to steal food) and activity level are rarely obtained. Stage 2 shows a greater resistance to treatment. Usually, dietary and sleep disorders require drug therapy for almost a whole year. Whatever the age when treatment is started, it seems necessary to warn owners of the handicap this illness constitutes for the learning of complex tasks (hunting, search and rescue, drugs and explosives detection, guide dog, hearing dog for the deaf, or dog for the disabled). An early diagnosis must therefore be encouraged to help owners have realistic expectations about the dog's potential abilities and limitations. In all cases, it is essential to warn the owners of the long duration of the treatment (5–9 months).

Treatment

This is based on the administration of psychotropic drugs aimed at controlling the overactivity and the establishment of a higher sensory homeostatic threshold. In addition, play therapy may help to stabilize all the animal's reactions. During drug therapy, different groups of psychotropic drugs may be used according to the clinical picture. Currently, selegiline is the reference treatment for this condition. Its dosage is 0.5 mg/kg taken in a single morning dose. In some stage 2 cases, establishing normal satiety and sleep duration requires the use of fluoxetine 1–2 mg/kg in one morning dose.⁵ Unfortunately, the improvement may disappear very quickly after the drug is discontinued. Therapy combines elements of play therapy and learning social inhibitions in techniques derived from direct social regression. We insist that play sessions are carried out with a lot of care and rigor. The main pitfall is that if the dog jumps when it has reached maximal excitement during play, it may mouth or bite its owner. In order to avoid these reactions, owners are advised

to stop play as soon as the dog produces acts which are not strictly connected with the play offered (e.g., during ball play, very quick short running phases around the play area while the ball trajectory is straight). Moreover, when the dog starts to jump around its owners, they should avoid all interaction, including waving their arms, which unfortunately is the spontaneous reaction of many people when a dog jumps on them.

Sensory deprivation syndrome

Description

Dogs suffering from deprivation syndrome have three possible clinical presentations, which correspond to very different deficiency levels and show an increasing level of severity. During stage 1 sensory deprivation syndrome (ontogenic phobias), dogs are presented for consultation because of their incapacity to withstand exposure to one or more types of stimuli. The most common stimuli are cars, urban noises, crowds, children, and persons with walking sticks or crutches. When exposed to these stimuli, the animals display typical fearful responses: flight, hiding, irritability, and aggression. Anticipation and generalization phenomena appear so the number of triggering stimuli may increase and the problem may progress to a more serious clinical stage or to other pathologies (secondary hyperaggressiveness). A primary complaint might be housesoiling if the dog refuses to go outside or stays outside for a time which is too short for it to do its business. This is the clinical picture of a phobia and not an anxious state, as believed a few years ago. The term "deprivation anxiety" is therefore not suitable for stage 1, but for stage 2. During stage 2 sensory deprivation (deprivation anxiety), the clinical picture quickly becomes dominated by inhibition signs and substitution activities. In the chronic state, activities may be permanently altered.

Exploratory behavior is deficient, with almost pathognomonic postural signs such as static exploration (feet together, neck stretched, ears bent backward, and tail between the hind legs) or an expectation posture at the start of many activities. Feeding behavior is also modified. It may be inhibited in the presence of, or following exposure to, new or unfamiliar stimuli. In a chronic case, nighttime eating periods are short and ingestion is quick (sometimes followed by regurgitation and reingestion), and the dog lies with belly up, tail between the thighs, and lowered ears. In fact, more than 75% of the dog's daily ration may be consumed at night. The other notable fact is the rigidity of behavior of these animals. They always follow the same route inside and outside the house and they always come for their food at the same time. Any change in their routine may provoke withdrawal or panic attacks. Similarly, any change in the environment (i.e., a new piece of furniture or a new object in the dog's normal route) may trigger an expectation posture usually followed by an attempt to flee or a trembling attack associated with immobility, sometimes combined with somatosensory signs. Self-injurious behavior of the limbs, flank, or tail, which is produced as a result of these traumatic situations, is frequently the reason for consultation. These animals are especially observed in deprivation anxieties associated with a state of hyperattachment. Other displacement activities are sometimes observed, the most frequent being

polydipsia, whereas bulimia is extremely rare. Potomania was encountered in 5 out of 230 cases. Water consumption may reach more than 10 L/day, with a very active search for water. Potomania may lead to housesoiling since, as in stage 1, the dog may refuse to defecate and urinate outside the house.

Stage 3 sensory deprivation (depressed state) is largely dominated by the disappearance of exploratory behavior and play. Thus, this state is particularly easy to identify in a pup. Most often, the pup is lying down but does not sleep. It remains prostrate in a corner and only goes out at night. Eating happens exclusively at night. Elimination behavior is poorly controlled and may be observed in the area near to the normal sleeping place, or the dog may even exhibit encopresis and enuresis (elimination in the sleeping area). These clinical signs, although not pathognomonic (also found in attachment depression), are typical of a young age-onset depression, which will have the best prognosis if the clinician intervenes early. Very quickly (4–10 weeks), sleep disorders complicate the clinical picture. Micturition is generally associated with these awakenings. Progressively, the pup displays excitement and worrying periods (anxiety) just prior to nighttime sleep. It gets up, whines, scratches the walls, and looks for dark corners before falling asleep. Awakening occurs sooner and sooner and is repeated several times every night, thus decreasing the total duration of sleep.

Diagnosis

Stage 1 (ontogenic phobias) diagnostic criteria

- Phobic responses regardless of their stage of development
- Early onset, some days after adoption
- Strong anticipation.

Stage 2 (deprivation anxiety) diagnostic criteria

- State of permanent anxiety with strong anxiety signs
- Very inhibited exploratory behavior with static exploration
- An expectation posture found at the beginning of the behavioral sequence
- Ingestion of food in short bouts, with predominance of nighttime eating
- Low tolerance to changes in the organization of space and time.

Stage 3 (deprivation depression) diagnostic criteria

- Chronic depressive state (sleep disorders are present)
- Enuresis and/or encopresis
- Maintaining normal intra- or interspecific social behavior
- Intermittent excitement and the appearance of somatosensory acts (e.g., self-injurious behavior).

Differential diagnosis

This is described according to the stage of sensory deprivation. During stage 1, it is necessary to mention posttraumatic phobias and HS–HA syndromes in the differential diagnosis. For posttraumatic phobias, the decisive differential criterion is the age when the disorders appear. These phobias have a

sudden onset in a subject that was previously indifferent to the phobic stimulus. In many cases, the sensitizing episode or mechanism is easy to identify. HS–HA and deprivation syndrome have in common an increase in vigilance (at least for stage 1 with a few weeks' evolution). However, in HS–HA syndrome there is an absence of specificity of the stimuli triggering uncontrolled responses, whereas dogs at stage 1 of the deprivation syndrome are responding to stimuli that are easily identified. During stage 2, the differential diagnosis includes separation anxiety and anxiety disorders in the young adult. When the separation anxiety is expressed as a permanent anxiety, the distinction between both diagnostic entities is difficult. Many deprivation anxieties progress favorably through the development of hyperattachment, which itself is the source of separation anxiety. Only a precise analysis of the clinical data, especially the development of the disorder, helps to achieve this distinction. In the case where the clinical history does not help to make a clear decision (dogs adopted after several owners), therapy for separation anxiety promoting detachment might induce clinical signs of the deprivation syndrome to reappear. Whatever their origin (spontaneous development of a phobic disorder, deritualization anxiety, secondary anxiety due to thyroid or adrenal dysfunction), the anxieties of the young adult or adolescent may sometimes be mistaken for an untreated deprivation syndrome. Sequential analysis, the absence of expectation postures, and static exploration of these anxiety disorders, as well as the development and causes of appearance of the clinical signs, generally enable differential diagnosis.

The differential diagnosis of stage 3 includes detachment depression and reactive depression in pups. In the latter case, the easiest differential character to identify is the existence of social behavior, which is typical for dogs suffering from stage 3 deprivation syndromes, but is never the case in detachment depression. In addition, clinical manifestations are presented earlier within the first week of life. However, this is not always identified as owners do not always know about the puppy's background. In the case of reactive depressions in pups, differential diagnosis relies on the existence of a range of behaviors, including social acts typical of the animal's age, as well as a normally developed exploratory behavior during the period preceding the appearance of the disorders. Moreover, the majority of reactive depressions in pups are characterized by a sudden appearance of anorexia, which leads owners to early consultation. Sleep disturbances, a permanent manifestation in stage 3 of the deprivation syndrome, are not found.

Prognosis

Prognosis depends on the stage of the illness and the age at which treatment is started. Those at stage 1 have the best chance of recovery, whatever the age at which they are treated. Dr. Pageat reports more than 77% "good" or "very good" results with these patients. Conversely, those at stage 2 have a poorer prognosis depending on the age when treatment starts. Before puberty, a satisfactory recovery is observed in almost 60% of cases, whereas the success rate does not exceed 50% when treatment begins after puberty. Those at stage 3 have the lowest rate of recovery after treatment. These animals develop serious sequelae, with almost 57% displaying a clear playful, exploratory, and cognitive

deficit 1 year after the end of the treatment. The clinician must therefore warn the owners of the risk of a long-term deficient state when a stage 2 or 3 deprivation syndrome is diagnosed.

Treatment

Therapeutic strategies vary considerably according to the stage of the illness, particularly drug treatment. In any case, behavioral or cognitive therapies should always be applied. Some stage 1 cases may be subjected to a simple therapy with no drug support. In such cases the phobic responses must be only slightly developed and the owners very patient. In stage 1, when exposure to the phobic stimulus is characterized by avoidance or threatening behavior, beta-adrenergic antagonists (beta 1/beta 2) are particularly recommended (propranolol 1–5 mg/kg q 12 hours).⁵ [Authors' note: The maximum dose of propranolol used by Pageat is higher than that traditionally used for pets.] If aggressive behavior is present, normothymics (mood stabilizers) such as carbamazepine (10–20 mg/kg q 12 hours) may help.

Stage 2

Drug choice is based on the prevalence of specific symptoms reflecting one or another underlying monoaminergic system. Selegiline may be the best option. The clinical forms marked by strong inhibition and those characterized by the presence of the expectation posture and static exploration benefit from tetracyclic antidepressants such as mianserin (1–2.5 mg/kg q 12 hours).⁵ [Authors' note: While mianserin is used in the Pageat approach, its use in humans has largely been replaced by its analogue mirtazapine which has not yet demonstrated any clinical behavioral benefits for pets except appetite stimulation).]

Stage 3

First, the dopaminergic system should be stimulated in order to promote exploratory behavior and food consumption. Selegiline may produce good results without the problems of dosage associated with neuroleptics.

Behavioral and cognitive therapies for stage 1 are either therapies of habituation or desensitization with counterconditioning. Habituation is only possible when the phobic stimulus is unique and can be produced at will, which considerably limits its practical application. Moreover, this is a laborious and delicate technique and we clearly prefer desensitization associated with counterconditioning which, in addition to its flexibility, rapidly modifies patient behavior and thus simplifies the daily life of owners.

Those behavioral therapies are only partially effective in stage 2, in states of inhibition and in the absence of a degree of behavioral organization. It is more useful to carry out a cognitive therapy aimed at triggering behavioral patterns that do not yet exist, such as play-structuring therapy. It can be associated with a detachment therapy if necessary, in order to avoid the development of a separation anxiety. As for stage 3, it is necessary to proceed in two stages, along with drug therapy. First, when the dog receives neuroleptic treatment, it is necessary to enrich the environment in order to increase the sensory experiences initiated by the psychotropic drugs. These experiences must be positive in order to keep the motivation to explore. It may be effective to favor temporarily a state of hyperattachment of the dog

to one of its owners, in order to increase the animal's self-assurance without having to increase the dosage of drugs prescribed. However, the owners should remain vigilant to avoid establishing a significant emotional dependency, which would prevent a move toward a second phase of treatment. Having let the patient make contact with a great variety of stimuli in optimal conditions, the treatment can then move to a play-structuring therapy, as in stage 2. This therapy is generally facilitated by serotonin reuptake inhibitors following a sufficient weaning period after cessation of neuroleptics or selegiline.

Disorders in the development of social behavior

Separation anxiety

Description

The dog is presented for inappropriate behavior when separated from its owners, including furniture destruction, vocalization, micturition, and defecation spread throughout the home, and sometimes vomiting or an intense ptyalism. These signs may occur when the owners are absent, during the night if the dog sleeps in another room than their bedroom, or even during daytime when it cannot be beside them. These dogs are described as "very clingy," and they follow one or more family members very closely. The dog may follow the owners to the toilet and cry if it is not let in. These manifestations can be observed while the dog is with someone other than the person it always follows, since solitude is not the triggering stimulus. Some dogs may develop a lick granuloma, bulimia, or polydipsia. Reunion triggers excitement, which may last several minutes. However, owners quite frequently describe a completely different sequence in which the dog is "sheepish," displays signs of "guilt," going away from its owners with head low, ears bent back, a "tucked-up" behind, tail wagging between the legs, with perhaps whining. This response may be, according to the owners, due to the damage done during the separation period. Clinical signs and treatment for separation anxiety used by the authors are also described in [Chapter 12](#).

Diagnosis

Diagnosis relies on meeting the following five criteria:

1. Onset of the disorder before puberty
2. A state of hyperattachment characterized by all activities being organized around the attachment person, by maintaining visual contact before starting any activity, and by excitement and occasional whining if there is any attempt to move away
3. The existence of anxious manifestations triggered by separation and resulting in an intermittent anxiety (destruction of furniture, fear micturition and defecation, vomiting, ptyalism, whining) or a permanent anxiety (inhibition of the exploratory activity, lick granuloma, polydipsia, whining)
4. The persistence of infantile social behaviors after puberty (notably making contact with family members by mouthing or play biting; a very high frequency of play-eliciting postures)
5. The existence of departure and return rituals.

Differential diagnosis

It should be remembered that the appearance of a hyper-attachment bond is one of the signs of spontaneous improvement in stage 1 and 2 deprivation syndrome. When the symptoms of this condition are associated with separation anxiety or come before it, it is possible to diagnose both deprivation and separation anxiety syndrome. In sociopathy, the dominant subjects tend not to allow members of their group to leave their territory. As a result, during hierarchical confrontations such as those seen with sociopathy, the departure of the owners triggers aggressive behaviors against them. When owners manage to get out, aggression tends to be directed at the exit point or windows through which the dog sees them go away. Thus, furniture damage is extremely localized. Moreover, stains may appear on certain family gathering places (e.g., tables, chairs, sofa) due to social marking with urine or stool. As a result, differential diagnosis relies mainly on location of damage, urine, and feces. In separation anxiety, damage, urination, and defecation are dispersed. In sociopathy, aggression related to the owner's departure is observed.

The hyperattachment syndrome of the adult and separation anxiety present almost identical clinical features, except for two key aspects of the former: the sudden appearance of hyperattachment in a previously independent adult male and the existence of a normal social repertoire (absence of play biting or mouthing when making contact). The hyperattachment syndrome of the adult is always a secondary condition of another affective or mood disorder. Confusion with involutive (degenerative) depression can sometimes exist since animals suffering from both these conditions may housesoil and may produce whining and sometimes suffer from insomnia. However, in the case of involutive depression, the sudden appearance of disorders after age 5 constitutes a sufficiently noticeable diagnostic factor to avoid diagnostic errors. Only the separation anxieties which, because of the absence of appropriate treatment, have evolved toward an involutive depression may pose diagnostic problems.

The highlighting of the signs of degeneration, the fact that the housesoiling is not only made up of emotional micturition and defecation, but also of infantile elimination behaviors occurring even in the presence of the owners, and finally the value of the EDED and ARCAD scores help the clinician to reach a decision. The fact that a separation anxiety may appear in conjunction with involutive depression influences clinicians in their therapeutic action, and particularly leads them to carry out a detachment therapy in order to decrease the risk of relapse after treatment has stopped. A hyperattachment of the adult may appear in the first stages of the development of involutive depression and complicate the differential diagnosis. It is the timing of when the disorders appear (sudden appearance in a dog over 5 years) that helps to distinguish them.

Prognosis

This is very favorable provided that the owners have understood what has happened and go along with the exercises. Any situation of affective distress in the family constitutes an important difficulty in establishing the therapy and must be taken into account in the prognosis.

Treatment

To be conducted properly, drug therapy requires a proper identification of the type of anxious expression. At the beginning of the illness, when hyperreactivity and anxiety coexist, beta-blockers, particularly propranolol (1–5 mg/kg), are sufficient.⁵ [Authors' note: The maximum dose range of propranolol used by Pageat is higher than that traditionally used.] But this stage may be missed with owners usually seeking consultation when the dog is far more disturbed, when the damage done is more severe, and their patience has run out. Thereafter, drug treatment must provide a rapid attenuation of the disorder. The molecule that helps in any form of separation anxiety to stabilize the anxious state and facilitate detachment is clomipramine. Different drugs may then be added to modulate other specific expressions of anxiety. Its anticholinergic properties help it to curb fear micturition and defecation very rapidly. These same properties, together with its effects on the serotonergic system, also help to decrease and possibly suppress bulimia where it exists. Clomipramine or fluoxetine and dog-appeasing pheromone all give good results in combination with behavior therapy. Lastly, in the case where separation anxiety is mainly expressed by the appearance of lick granulomas, the use of alpha-2 agonist drugs such as clonidine (0.015 mg/kg divided twice daily), administered alone or in conjunction with fluoxetine, can decrease the intensity of anxious manifestations and suppress licking in 1–2 weeks. Behavior therapy consists of two elements: (1) a detachment therapy that aims at breaking the hyperattachment bond whilst establishing a link to the group; and (2) a deritualization of departures and returns. In certain cases, the establishment of hierarchical markers is added, in order to stabilize and make durable the relations between the animal and its owners.

Primary dyssocialization

Description

These dogs could be described as "canine delinquents." They are older than 3 months when irritable aggression and sometimes hierarchical aggression are observed, triggered by the owners' attempts to control the activities of the dog. Similarly, these animals are food "thieves," but these thefts are generally associated with aggressive behaviors. They never show submission; they are described as "preferring to be knocked out rather than give in"; as a result, the owners usually stop reacting. During aggression, the bites are violent, inflicted without any control, but always associated with threat signals that are generally produced simultaneously with the bite and sometimes continue while the dog is biting its opponent: this is a "holding" bite. In some cases, micturition, defecation, and emptying of the anal sacs can be observed together with the aggression. When exposed to other dogs, these dogs are thought to be fighters and, in fact, they often initiate the attack and start serious and bloody fights. Since there is an absence in control of the aggression, when the opponent submits, this immediately retrigger the fight. Similarly, confronted with a more powerful opponent, dyssocialized dogs are often the victim of deep wounds because of their inability to show submissive or appeasing behavior, thus inhibiting the aggressiveness of the opponent.

Diagnosis

Diagnosis is based on four key signs:

1. Irritable aggression and hierarchical aggression with the phase of intimidation occurring simultaneously to the bite
2. A lack of acquisition of the "inhibited bite"
3. A lack of acquisition of the ability to show submission (absence of submission posture)
4. An absence of hierarchical organization around feeding.

With age, other modifications of social behavior appear, particularly a strong tendency toward sexual behaviors in the presence of the owners, aggression when the animal meets fellow creatures of the same gender, particularly when the dog is with an owner of the opposite sex. These dogs are often in a situation of hyperattachment with one of the family members and thus may develop separation anxiety. In this case, the diagnosis is primary dyssocialization with separation anxiety.

Differential diagnosis

Two behavioral conditions that have some signs in common with primary dyssocialization match with very different pathological states: HS-HA syndrome and sociopathy. It is easy to tell the difference between HS-HA syndrome and primary dyssocialization. The bites from animals suffering from HS-HA syndrome do not result from aggression (there are no threat signals), but from motor responses during play. In addition, sleep disorders are observed in these patients but not in dyssocialization. In real sociopathies, the dog has a complete social repertoire, and hierarchical imbalance only develops because of the acquisition of prerogatives, as a dominant, at the time of puberty, or during the remainder of its adult life. It is possible to notice with these patients a very good capacity to modulate bites (the owners often say that their dog "grasps" more than bites), threat phases that are very distinct from the rest of the aggression, and no attempts to "steal" food. These dogs respond to environmental triggers as expected for the nature of their behavior.

Prognosis

Prognosis is generally good. However, two factors are linked to a poor prognosis: large dogs and the presence of young children. Indeed, it is important to realize how dangerous a dog could be when it is unable to show self-control and sets no limits to satisfy its drives. The dangerousness of such an animal, the risk that treatment poses, and the clinician's legal responsibility (both civil and criminal) in the case of an accident should lead him or her to be extremely careful and to warn the clients of all potential risks. In addition, the presence of very young children poses an important risk of irritable aggression and injury. If they are attracted to the dog and are unaware of how to interact safely and appropriately with it, they may trigger irritable aggression. Their sudden movements and the fact that they eat food at the same level as the dog all contribute to the risk of triggering serious bites, which often affect the face. In these cases practitioners must be very careful to discuss all aspects of the problem before deciding to proceed.

Treatment

This should be varied according to the clinical picture and the elements of prognosis. The combination of clomipramine (0.5–2 mg/kg q 12 hours) and pipamperone (30 mg/m² divided twice a day) facilitates therapy for the less aggressive subjects, whilst facilitating the treatment of separation anxiety that is frequently present. However, a recurrence and a new wave of irritable aggression may appear, very often after 8–15 days. This change is associated with a total increase in mobility. This worsening may be explained by a sensitization of the dopaminergic structures in response to the suppressive action of pipamperone. This hypothesis might explain the positive effect of an increase in the dosage of pipamperone (60 mg/m²) from the 8th to the 10th day. However, this solution may prove insufficient in some subjects, especially if these relapses recur during treatment. Thymoregulators may then provide a good response. This is particularly true for carbamazepine (20–40 mg/kg), whose regulating activity on impulsiveness and also suppressing effects on irritable aggression help to treat the most excitable patients. Selegiline, although it is usually not considered a normothymic in pharmacological classifications, offers interesting possibilities in the treatment of these disorders.

Behavioral therapies must be part of the treatment, in association with drug therapy. On one hand, directed social regression is applied and, on the other, a therapy through play promotes self-control. Both therapies are conducted together. It is necessary to follow the progress of the family very carefully, in order to prevent any mistakes due to a feeling of fear or withdrawal, which might lead the owners to let the dog occupy a dominating position.

Heterospecific imprints

Description

Affected animals present an absence of courting behavior and attempts to mate in front of receptive dogs of the opposite sex, together with sexual behavior towards individuals of the opposite sex from other species. Other behavior changes may occur later on, particularly sociopathy. The clinical presentation is often complicated by hyperattachment.

Diagnosis

Diagnosis is simple and relies on the following symptoms:

- An absence of sexual behavior in the presence of a receptive conspecific partner (in males, pheromones still trigger a state of excitement)
- Sexual behavior triggered by a heterospecific partner, usually of the opposite sex, belonging to the species with which the dog lived during the imprinting period.

Signs of sociopathy are sometimes identified; a sociopathy along with heterospecific imprint is then diagnosed. Similarly, in the case where a state of hyperattachment exists and is the source of a separation anxiety, a diagnosis of separation anxiety with heterospecific imprinting is proposed.

Differential diagnosis

Three clinical conditions must be differentiated: sociopathy, sexual deviations of owners (zoophilia), and the normal

sexual inhibition of subordinate individuals. With sociopathies, there may be true sexual manifestations and mounting related to dominance that may confuse and lead to a worse prognosis (with the heterospecific imprint complicating and making the situation barely manageable). The distinguishing criterion in sociopathies is based on the existence of normal sexuality triggered by conspecific partners. In the very particular and delicate case of anthropophilia with dogs living with a zoophilic partner, the dog, if it seeks sexual relations with the human being, still displays a normal sexuality when in the presence of receptive fellow dogs. The admission to zoophilic practices by the owner simplifies the work of clinicians. It must be noted that this situation, which generally concerns male dogs, tends to increase the sexual motivation of the animal, which displays courting behavior even in the presence of a nonreceptive bitch (outside estrus). We have seen that subordinate individuals display a normal sexual inhibition in the presence of a dominant subject of the same sex.

This phenomenon concerns both males and females, but confusion with a heterospecific imprint is only possible with males. Indeed, even a subordinate individual, in the presence of a female in estrus, displays a phase of excitement followed by a series of appeasement signals toward the dominant present. As a result, we may receive for consultation dogs that, when introduced to a female for mating, in the presence of their owner, do not mount but turn to the owner, moaning, rubbing their neck on the owner's legs, and wagging their tail, ears bent back on the neck. This is a normal sequence and the only way to achieve mating consists of putting the dogs into contact, outside the presence of the owners.

Prognosis

The prognosis is very poor. We have only in exceptional circumstances been able to redirect the specific identification and thus the choice of the sexual partner. Only with animals in which it is feared that imprinting disorders might occur, and for which immersion in a pack is set up, may normal sexual behavior be restored. It is important to recognize these factors in order to act very early on and especially to warn the owners who might want their animal for breeding purposes.

Treatment

Treatment is almost impossible. It is however possible to avoid the development of disturbing sexual behaviors in subjects imprinted to the human species, consequently preventing the appearance of a sociopathy. When the developmental conditions of the male or female pup help us to predict the appearance of such disorders, early neutering may prevent the occurrence of sexual acts. Later, castration only provides a decrease in the frequency of sexual manifestations. Apart from cyproterone acetate (3–5 mg/kg divided twice daily for 2–3 weeks) in males, few preparations help at all.⁵ In terms of therapy, directed social regression is particularly recommended. By placing the dog or bitch in a subordinate position, the expression of its sexuality is also inhibited, which suppresses disturbing sexual behaviors. Conversely, when the result sought is the appearance of an intraspecific sexuality, immersion for at least 15 days with conspecifics of both sexes is necessary. As we have

highlighted regarding the prognosis, only very young subjects or those in puberty are likely to respond positively to this therapy.

Thymic disorders (mood disorders) of puppyhood and adolescence

Reactive depression in pups

Although reactive depression may occur at any time, reactive depression in pups deserves to be treated separately, both because of the particularities of its symptomatology and because of its seriousness.

Description

Affected pups display a homogeneous clinical picture, marked by a generalized state of inhibition. They are immobile, apathetic, no longer play, and drink very little or not at all. As a result, the physiological state deteriorates rapidly and requires quick medical intervention.

Etiology and pathogenesis

Any intense stress is likely to incite this state, such as an accident, violent punishment inflicted by a human or a fellow dog, painful stimuli (Dr. Pageat reports having observed 11 cases in 5 years that resulted from tattooing with a pincher), or abandonment. This state results from an extreme emotional response. An attachment bond seems to protect the pups, as found in the 44 cases we have studied. When the pups have developed a proper attachment bond, the stressful situation seems to be tolerated better; in contrast, when the stressful situation is related to that social relationship, the depression state may quickly develop.

Diagnosis

The diagnosis is made following a clinical assessment for any underlying pathology and after a first therapeutic phase aimed at getting the pup to eat. However, the symptoms of reactive depression are easily identifiable:

- sudden stopping of any activity in a pup that had been normally active before
- sudden appearance of hypersomnia (average duration of sleep multiplied by 1.5–1.8)
- anorexia and adipsia
- enuresis/encopresis
- if there was reanimation and force feeding, an absence of resumption of activity is noticed despite the return to a normal feeding state and worsening of enuresis and encopresis.

Differential diagnosis

An infection, parasitic illness, fever, stage 3 deprivation syndrome, early detachment depression, and separation anxiety must be considered. In pups, any morbid state is frequently accompanied by a restriction in activity, an indifference to stimuli, and a decrease, or possibly a disappearance, of appetite. This is why a comprehensive clinical examination is always necessary when assessing any behavioral problem. The differential diagnosis of stage 3 deprivation syndrome relies on the evolution of the condition. In patients suffering from a stage 3 sensory deprivation

syndrome, the disorders can be observed within the first days after adoption. Conversely, reactive depressions occur in animals that previously did not present any behavioral abnormality. In the case of early detachment depression, the incapacity of the owners to establish any contact with the animal and the absence of a period during which the animal might have shown some “normal” behavior are major criteria to distinguish the problem from illnesses. In the most severe cases of separation anxiety, during a prolonged separation, a clinical picture can be observed that is totally identical to reactive depression. In this case, we believe it is logical to make the diagnosis of reactive depression and of separation anxiety. Separation from the person to whom the pup is attached triggers the depressive state. It is important to take into account both morbid states, because lifting the depressive state may bring back the range of behavioral manifestations of separation anxiety, which may disturb the owners.

Prognosis

This is always positive at the behavioral level. However, very worrying situations may be encountered at the somatic level when the cause of anorexia has not been diagnosed and the animal has continued to fade because of lack of appropriate supportive care.

Treatment

The main element of treatment is drug therapy, combining antidepressants and anxiolytics. The former help restore behavioral competence in the patient, whereas the latter immediately relaunch the activity of the animal whilst avoiding the appearance of anxiety that might accompany the first week of antidepressant treatment. The antidepressants used are essentially 5HT_{1A} inhibitors whose specificity is more or less marked. Mianserin (2–5 mg/kg divided into two daily doses) with a mixed activity (alpha-2 antagonist, H₁, H₂) is interesting because it can be prescribed alone in patients with a recent onset. No specific forms of behavior therapy are indicated, except in the particular case of reactive depression associated with separation anxiety. Then, specific therapies of these anxieties are instituted as soon as antidepressants have helped the dog resume spontaneous behavior. In other cases, it is sufficient to make the dog play by attempting to vary the types of games in order to stimulate all the sensory channels. Clinicians will need to remain vigilant about the risk of food rituals and preferences that might have developed when the owners were trying to treat their anorexic puppy.

Disorders in the relationship with the external environment

This category currently contains one clinical entity: the dissociative syndrome of dogs.

Dissociative syndrome

One of its main characteristics is the progressive loss of interaction with the real world in favor of increasingly severe hallucinatory-type episodes. Hallucinatory episodes might be defined as repetitive behaviors that are not caused by

underlying medical pathology and do not appear in response to an identifiable stimulus (e.g., snapping at air, circling, looking upward). This is a very crippling affliction with lifetime treatment and/or monitoring. Moreover, during hallucinatory episodes some subjects may be dangerous for the family.

Description

Age at the first consultation is between 12 and 20 months. The animals are presented because of the appearance or increase of repetitive behavior (e.g., circling, clicking jaws, jumping) which appears to be related to no identifiable stimuli. In most cases, owners describe an animal that appeared normal during the first 6–8 months of life, and then began to display an initial “strange” episode, often called a crisis. This first episode may have appeared spontaneously or in response to a highly stressful event. This distinction is an important consideration for the prognosis. There may also be concurrent medical problems, such as demodicosis.

Etiology and pathogenesis

Although the etiology is unknown, all the clinical factors, both somatic and behavioral, suggest a disturbance in a number of neurotransmitter systems. Based on therapeutic trials, there appears to be a mixed serotonergic and dopaminergic dysfunction.

Epidemiology

German shepherd dogs and bull terriers appear to be over-represented (although this diagnostic category is not used in North America, so this breed predisposition may happen to be a regional finding). Other breeds may also be affected, including Irish setters, Rottweilers, Doberman pinschers, Pyrenean shepherds, and some cross-breeds of shepherds and spaniels. Family prevalence is important. According to Pageat, clinical signs first arise between 7 and 31 months for the majority of subjects (88.5%), with 9.7% of cases having a first episode between 4 and 7 months (mainly with German shepherd bitches), and some cases may not appear until around the age of 5 years, when the history is somewhat more unusual (dogs living outside).

Development

Before the morbid phase, there is a premorbid phase, during which many disorders in social behavior are observed. This initial stage may appear from the age of 6 to 9 weeks. In females, a tendency for withdrawal is mainly observed. The pup avoids taking part in games with both its conspecifics and humans, without showing any fear or panic. Social communication is characterized by either avoidance or an interruption of the normal sequence behaviors, for no apparent reason. The family generally describes these animals as “shy.” With males, a great impulsiveness is noticed, which manifests itself mainly by “brutality” during strong affective interactions (positive or negative, depending on the anger of the owners). As with females, a tendency not to finish social interactions is also noticed. Females represent 78.5% of the subjects having an avoidance-type premorbid phase, whereas males represent 69.3% of subjects with a premorbid impulsive phase. During the rest of their lives, in the absence of

any treatment, dissociation worsens and leads noticeably to severe cachexia.

Diagnosis

Diagnosis relies on meeting three or more class 1 symptoms. The existence of a class 2 symptom confirms the diagnosis.

Class 1

- Disorder appears between the prepuberty period and 5 years
- A growing loss of receptivity to the environment
- The existence of hallucinatory episodes of the same kind
- The production of stereotypies during hallucinatory phases
- The existence of stupor phases with somatosensory activity
- The existence of a premorbid stage of the avoidance or impulsive type.

Class 2

- Uni- or bilateral dilatation of the lateral ventricles
- The presence of isolated peaks on the electroencephalogram (noticeably in the occipital region)
- Demodicosis.

Differential diagnosis

As in all cases of developmental disorders, there can be many diagnostic possibilities, especially in the early stages when the signs are mild. However, six conditions should be considered in the differential diagnosis: (1) stage 2 and 3 deprivation syndrome; (2) constraint stereotypies; (3) recurrent hallucinations due to ketamine; (4) hydrocephalus; (5) hyperadrenocorticism; and (6) primary or functional hypothyroidism.

Prognosis

The prognosis is poor. According to Pageat, almost 28% of animals do not seem to respond to treatment. One should consider the circumstances of appearance of the first dissociative episode. Some dogs develop their first episode following a violent and identifiable stress event, whereas others enter into a morbid phase without any noticeable event. Pageat's results of 99 cases indicate that the former group responds better to the first therapeutic protocol at significantly lower doses and with a longer interval between outbreaks.

Pharmacological therapy

Therapy may help to stabilize the animal, and limit the risk of development of anxiety disorders. Two well-known therapeutic strategies can be used according to the context and the objectives. In cases where treatment is initiated very early after the appearance of the first dissociative episode, seligiline provides improvement, as shown by a re-established interaction with the environment and an emotional stabilization that delays future episodes. In cases with short stereotypies and impulsive components, fluoxetine provides some stability. However, the results obtained with these treatments are only transitory, with the need to move to more specific

molecules. In chronic cases, neuroleptics and derivatives are the preferred molecules. After trying many molecules that are used for the treatment of schizophrenia, risperidone is the treatment of choice at a dose of 1 mg/m² once a day.

Conclusion

The dissociative syndrome is probably still an underdiagnosed condition, but appears to be important because of its prevalence in some breeds. From the perspective of comparative behavioral medicine, it could be an interesting animal model for schizophrenia.

Disorders of social interactions

Social phobias

Description

This section groups disorders in which the animal proves unable to tolerate certain intra- and interspecific social interactions (gaze, physical and vocal contact). This phobic state bears no relation to the physical environment or the particular individual with which the dog is interacting; it only relates to the interaction itself. This is why we have described these phobias as "social." It would be both overzealous and useless to draw up a catalog of all the social phobias that can be encountered in clinical medicine. However, some are more frequently seen than others in the canine species. These are interactions noticeably based on sight, sound, or touch. Whatever the individual, breed, or place where the social interaction takes place, the dog suddenly breaks the interaction and moves away from the participant. This systematic breaking of contact generally constitutes the reason for consultation.

Diagnosis

Diagnosis is based on the following symptoms:

- a systematic avoidance of one type of social interaction
- the existence of a normal social repertoire in other contexts.

Differential diagnosis

Differential diagnosis should be focused on excluding precocious detachment depression and primary dissocialization. In precocious detachment depression, all communication functions are altered, i.e., these subjects have no social repertoire. In the case of primary dissocialization, in addition to the absence of social inhibition mechanisms, a search for contact is often noticed, even if it leads to aggression.

Prognosis

This depends on the age of the dog at the time of diagnosis. Older subjects seem to require longer therapy, which is often difficult for the owners. The development of a secondary anxiety tends to worsen the condition, particularly when it manifests as an intermittent anxiety and includes aggressive manifestations.

Treatment

As with all social behavior disorders, this relies primarily on drug therapy. Drug therapy aims to suppress flight reactions

and is focused on the regulation of noradrenergic activity. Beta-blockers are an important aid, without the risk of facilitating aggression. Propranolol (1–5 mg/kg) is the drug of choice unless there are cardiac contraindications.⁵ [Authors' note: the maximum dose of propranolol used by Dr. Pageat is typically much higher than traditionally used in pets.] In this case, the antiproduktive phenothiazines used at a low dose helps these patients. Thioridazine (30 mg/m² divided bid) and fluphenazine (50 mg/m² divided bid) are the most reliable compounds. Behavior therapy uses play to induce positive interactions within a context perceived as negative. This is a counterconditioning technique, which can be complemented by other techniques, mainly cognitive therapies. These aim to show the dog that the interactions usually sought by the animal can only begin after the establishment of a contact that would have previously led to a phobic reaction. This pushes the animal to tolerate it. These cognitive techniques should not be applied at an early stage, because they can favor the establishment of a state of acquired distress and then depression. If the dog does not manage to overcome its aversion to the phobic stimuli, it may be deprived of other very important interactions at the hierarchical level as well as the affective level. Propranolol helps to decrease these risks.

Disorders of hierarchical organization

In any analysis, these disorders should be considered as affecting the entire social group and not just the individual. However, incoherent hierarchical markers rapidly disorganize the behavior of the dog, which explains their place in this categorization scheme. However, in order to highlight the involvement of the whole social group in these problems, they have been termed sociopathies.

Sociopathies in canine groups (between dogs)

Description

These are the most frequent complaints in veterinary behavior practice. Sociopathies appear in dogs living in groups of variable size (two dogs and more). Classic symptomatology is characterized by an increase in the frequency of hierarchical, irritable, or both territorial and maternal aggression. Besides these common clinical forms, sociopathies may also manifest by hierarchical micturition or pseudocyesis. In some cases, the sociopathy may lead to one group member being killed.

Diagnosis

This implies the existence of one of the following factors: behavioral disorders occurring after the introduction of a new subject into the pack or behavioral disorders occurring after the start of sexual maturity of one of the members of the pack. These factors are associated either with the animals being unable to carry out fights until submission of one of the opponents, or with the loser being unable to move away from the group.

There is also one of the following symptoms:

- An increase in the frequency of hierarchical, irritable, or territorial and/or maternal aggression that may be direct or redirected

- An increase in the frequency of hierarchical micturition
- An increase in the frequency of hierarchical mounting
- Pseudocyesis with little nurturing behavior but maternal aggression
- An increase in the frequency of eating
- Stealing of pups by bitches
- Infanticide.

Differential diagnosis

Differential diagnosis includes primary dyssocialization and dysthymias. In the case of a primary dyssocialization, the trigger does not match the above description as the dog has always been aggressive toward its fellow creatures. Moreover, it does not possess a full social repertoire and, in particular, is unable to submit. The differential criterion with dysthymia is related to the unpredictable and incoherent character of the aggression, which is only limited to irritable aggression.

Prognosis

Prognosis is variable according to the age of the disorder and also the size of the pack. In our experience, packs of more than eight dogs are difficult to reorganize, and it can then be simpler to divide the group whilst respecting the affinity of subgroups.

Treatment

Treatment is mainly focused on behavior therapy. Biological treatments should be used with a lot of care. Drug therapy is limited to the control of impulsiveness. Thymoregulators, a class in which Pageat includes carbamazepine (20–40 mg/kg), may be used. Hormone therapy and castration usually complicate things by disturbing pheromonal communication. Therapy is systemic and aims at helping the group reorganize by using its own mechanisms. The work of the behaviorist mainly consists of persuading the owners not to interfere. Spatial organization of the breeding areas should allow the losers to withdraw from the sight of the winners. Kennels whose opening is turned toward the outside of the enclosure, or corridors that allow the making of sanctuaries, are simple practical solutions to prevent serious accidents and conflicts becoming permanent.

Sociopathies in human-dog groups

Description

Hierarchical conflicts between humans and their dogs are amongst the behavioral disorders most frequently reported by veterinarians and owners. Unfortunately, this has contributed to many trainers and veterinarians explaining all problems as hierarchical disorders, when many other causes must be considered. Sociopathies in human-dog groups are behavioral disorders that occur in a context of ambivalent interactions. This diagnosis should not be made on dogs that completely dominate their owners, but with animals whose hierarchical situation has become ambiguous by allowing privileges usually associated with a dominant status, while adopting a dominating attitude in other hierarchically significant situations. Many behavioral complications result from this: aggression, hierarchical micturition, pseudocyesis, and destruction of the furniture.

Etiology and pathogenesis

In essence, this is the same mechanism as sociopathies within a pack. Maintaining an ambiguous situation leads to the production of dominant communication signals and aggressive behaviors that help to resolve the situation. Very rapidly, an increase in vigilance and the appearance of anxious behaviors are observed. The problem may arise with owners where ambivalence in their actions disturbs communication and leads to an ambiguous relationship with their dog.

Development

In more than 35% of Pageat's cases of this disorder, an anxious state (stage 1) is predominant. The first phase may be characterized by phobic behavior that leads the owners to seek help and may conceal other aspects of the clinical picture. In this phase the dog is wary, hypervigilant, may have concurrent gastrointestinal signs, and reacts to any noise. At this point fear aggression is observed. Most untreated sociopathies evolve toward a secondary hyperaggressiveness under the effect of instrumentalization (learning). The complete aggression sequence includes warning or intimidation, biting, and appeasement. At first there may be an appeasement phase, but over time this entirely disappears. Soon this phenomenon affects the intimidation phase and bite control disappears. The problem progresses with each successful event. Retreating and submission of the owners reinforce the problem. This development of sociopathies justifies a distinction of two clinical stages:

- stage 1 or reactive-stage sociopathies, which are characterized by an unaffected aggression sequence
- stage 2 sociopathies or secondary hyperaggressiveness, in which the aggression sequence has been instrumentalized.

Diagnosis

A dog enjoying one or several prerogatives associated with a dominant status is a necessary condition. In addition, at least two of the symptoms from the following list must also be present:

- a triad of sociopathies (hierarchical aggression + irritation aggression + territorial aggression)
- an increase in eating in the presence of one or several family members
- hierarchical micturition (marking)
- hierarchical mounting on one or several persons of the same gender as the dog
- pseudocyesis with little milk production, no nurturing behavior, but aggression toward the owner around the substitution object
- appropriation of the children and maternal aggression when the female owner approaches
- aggression with the female owner
- destruction of furniture around the exits by which the owners leave their home or around windows from which the dog sees them leave.

Differential diagnosis

This includes primary dyssocialization, HS-HA syndrome, and separation anxiety. The distinction with primary

dyssocialization relies on the fact that the dyssocialized dogs are unable to submit when they have lost a fight. In the case of the HS-HA syndrome, the only aggression is irritable aggression and the dog has not acquired an inhibited bite. In separation anxiety, destruction is extensive and micturition and defecation are of an emotive nature.

Prognosis

This must be precisely evaluated because of the risks that the dog may pose to the family. The first criterion is the developmental stage of the sociopathy. The reactive stage generally has a good prognosis. Conversely, at the secondary hyperaggressivity stage, the dog is dangerous and the owners must be warned. If clear and sound advice is not provided the veterinarian may share legal responsibilities in case of an accident. At this stage, the prognosis is guarded. The behavior of the animal is completely disorganized, which implies an intensive and long treatment program. Another practical consideration is the size of the dog. Indeed, it is easy to understand that a sociopathy in a 1.5-kg Chihuahua is less of a concern than in an 80-kg St. Bernard.

We should also take into account, when determining the prognosis, the hierarchical position of the dog in relation to its owners. This factor can easily be evaluated by a description of the way the dog carries out the bite during the sequences of hierarchical aggression. When the dog bites briefly, we have a dog that perceives itself as dominating its opponent. In this case, we can conclude that the position of the dog requires a much longer and more difficult therapy in order to invert the relationship. Conversely, when the dog holds the bite until the opponent submits, we are facing a situation of change. The dog is in an ambiguous hierarchical position which is easier to balance.

Treatment

The decision to resort to drug therapy depends on both the developmental stage of the sociopathy and the physical strength of the animal. In stage 1 sociopathies, drug therapy only becomes necessary if the animal is particularly strong. However, at stage 2 it becomes compulsory.

The feelings of the owners must also be taken into account. Indeed, if they fear interactions with the dog, resorting to psychotropic drugs might help facilitate the behavioral techniques. The objective of drug therapy is to decrease the transition to the biting phase and not to suppress aggression completely. Suppression might only be achieved with treatments that deeply alter the learning capacity of the animal and render the behavior therapy inoperative. Therefore these types of drugs also have the inconvenience of demotivating the owners who no longer see the need to modify their behavior. The treatments most used generally combine carbamazepine (20–40 mg/kg divided bid) and cyproterone (3–5 mg/kg divided bid). Pageat found that, in recently developed sociopathies, risperidone (1 mg/m²) produced excellent results. In the more developed cases, when the mood of the animal has destabilized (EDED > 20), selegiline provides rapid stabilization.

The treatment of stage 2 sociopathies involves more complex strategies. For the safety of the owners, the first 8–15 days of treatment must be carried out under hospitalization in order to obtain a stable and reliable state. The objective is the reappearance of growling in all aggression

sequences. Until this objective has been reached, the dog must be kept hospitalized. Currently, the most useful treatment is fluoxetine, perhaps combined with dog-appeasing pheromone. However, this therapy is sometimes unsuccessful when latent conflicts between the owners lead one or several of them to support the dog almost consciously. Furthermore, the clinician quite frequently encounters situations in which the owners have given up through fatigue or are afraid of their dog and avoid confrontation. In this case, objective therapies with self-evaluation are very effective.

Anxiety disorders in adults

Phobias in adults

This section only refers to nondevelopmental phobias. Nevertheless, it should be remembered that, if not treated, developmental phobias (stage 1 deprivation syndrome) may also be present in adult patients.

Description

Adult phobias correspond to posttraumatic phobias. They have all the characteristics of phobias and occur after a sensitizing event. From this triggering event, the dog presents phobic responses whenever it is exposed to the stimulus.

Diagnosis

In general, this is the appearance of a state of fear when exposed to a stimulus rendered sensitizing by a traumatic episode. Three stages are identified:

- stage 1: unique and identifiable stimulus; stream of typical reactions to the state of fear
- stage 2: multiple stimuli that have in common their frequent precedence to exposure to the initial sensitizing stimulus; predominance of avoidance responses
- stage 3: stimuli that are difficult to identify because they are very numerous and unrelated to each other; appearance of direct organic manifestations.

Differential diagnosis

Differential diagnosis should include ontogenic phobias, phobic attacks, and dysthymias. The distinction from ontogenic phobias is important both because of the poorer prognosis of these disorders and the possible financial consequences regarding the breeder. While it may be reasonable to ask breeders to assume responsibility for ontogenic phobias, the same does not go for posttraumatic phobias. Ontogenic phobias appear from adoption, when the pup arrives at the house. In the case of phobic attacks, examining the whole clinical picture connected with the hierarchical conflict helps avoid confusion. In the productive phases of dysthymias, changes in reactivity may lead to confusion. However, the existence of other symptoms, noticeably sleep disorders, is sufficient to make the difference.

Prognosis

Prognosis is generally favorable; the only limiting factor is the patience and level of motivation of the owners.

Treatment

In drug therapy, the choice is guided by the stage of the phobia. At stage 1, propranolol (1–5 mg/kg divided bid) is useful.⁵ At stage 2, we might use antidepressants such as mianserin (5–10 mg/kg divided bid). At stage 3, selegiline (0.5–1 mg/kg) may stabilize the animal. Behavior therapies include systematic desensitization associated with counter-conditioning, communication flow control therapies, or even play therapy.

Thymic disorders in adults

This section includes mood (thymic)-altering disorders, i.e., the pet's willingness to react. We have divided them into two subsections according to specific clinical criteria, which may reflect different underlying biological mechanisms.

Depressive disorders of adults

The depressive disorders have in common the existence of constant symptoms, which are characterized by a depressive state. They differ however by the existence of associated disorders that usually result from the etiological mechanisms involved.

Reactive depression

Description

This is an acute depressive state, i.e., characterized by the occurrence of anorexia or hyporexia with hypersomnia. This clinical form of depression appears 8–10 days after high stress. Reactive depressions result from the loss of reversibility of emotional expression. The clinical presentation is dominated by a loss of voluntary mobility, especially exploratory behavior, but also by anorexia, hypersomnia, and the production of whines without any physical cause. There is also an indifference to all outside stimulation, even those which used to trigger organized behaviors (e.g., play, work).

Diagnosis

Signs include:

- onset after an identifiable stressful event
- the disorder appeared more than 10 days ago
- hypersomnia
- inhibition of exploratory behavior
- loss of interest in the environment and depression of normal activities
- production of whines over a long period of time.

Differential diagnosis

Differential diagnosis includes chronic depression and pyrexia. The most obvious criterion for differentiation is the existence of a dysorexia and the development of paradoxical sleeping in chronic depression. With regards to pyrexia, interleukin-1 released during the febrile reaction increases sleeping, inhibits appetite, and may cause a depression-like behavior. For this reason, infectious causes must first be ruled out.

Prognosis

Prognosis is generally favorable. Anorexia can be dangerous in young or debilitated subjects. In these cases, it is especially important to start the treatment to re-establish eating rapidly; otherwise force-feeding may become necessary. Nevertheless, these situations are rare in dogs, whereas they are quite frequent in cats.

Treatment

Antidepressants can be used for therapy. For reactive depression, norepinephrine or dopamine reuptake inhibitors seem to be most useful. Dr. Pageat mainly recommends mianserin (2–5 mg/kg divided bid). The primary purpose of drug therapy is to stimulate the resumption of initiative. Play, work, and agility are also likely to support this resumption.

Chronic depression

Description

Dogs suffering from chronic depression have altered behavioral functions. As in acute depression, a loss of interest in all types of stimulation as well as all usual activities is noticed. But what strikes clinicians is the existence of sudden emotional reactions in the absence of any significant eliciting stimulus. These sudden reactions are usually accompanied by cries and excitement. Dietary behavior is profoundly modified, with periods of hyporexia following bulimic periods. This sequence has no regularity; changes sometimes occur within the same day. Sleeping is subjected to profound modifications with qualitative and quantitative disturbances. We also notice a progressive advancement of paradoxical sleep, which may even end up starting the cycle. This inversion in the organization of the cycles is accompanied by a lengthened duration of the phases of paradoxical sleep. During these phases, the dog seems more excited and ends up waking suddenly and frequently, producing howls, and micturating and defecating in its sleeping place (enuresis, encopresis). The sleep disturbances (dyssomnia) rapidly lead to the appearance of a phase of wariness during the period preceding going to sleep. Dogs whimper, pant, try to lie down, and get back up straight away, which the owners interpret (maybe rightly) as being afraid to go to sleep. These presleep anxiety disorders are found in most chronic thymic disorders.

Diagnosis

Chronic depression is associated with the following signs:

- dyssomnia characterized by an advancement of paradoxical sleep
- dysorexia (diminished or abnormal appetite)
- loss of initiative
- loss of control of emotional responses.

Additional signs:

- prehypnotic anxiety
- enuresis and/or encopresis
- “dragging their feet” walk
- whining while staring at an object or a place.

Hypothyroidism and Cushing’s syndrome must be ruled as contributory factors (leading to endogenous depression).

Differential diagnosis

Involutive depression or bipolar dysthymias must be ruled out. The distinction with involutive depression is related to the presence of clinical signs of involution. Two characteristics of bipolar dysthymias are distinguishable: first, the bipolar disorders are cyclical in character and develop over several days to several weeks, which is quite different from the sudden and sometimes multiple changes of chronic depression; second, the productive phases of dysthymias are accompanied by a considerable decrease in the duration of sleep, to less than 6 hours per day.

Prognosis

Prognosis is good, although Pageat reported an average relapse rate of 11% 6 months after the end of treatment, in his cases.

Treatment

Treatment is mainly based on drug therapy. Endogenous chronic depression must have a specific drug treatment. Thus, daily thyroxine helps stabilize quite rapidly the mood in hypothyroidism, while recovery of normal cortisol activity in Cushing’s syndrome lifts the depression. In addition to treatments based on o,p’DDD (mitotane), trilostane, or ketoconazole, or adrenalectomy for adrenal-dependent hyperadrenocorticism, selegiline (0.5 mg/kg) may help to regulate the adrenal corticoid activity by controlling dopaminergic disturbances associated with this illness. Selegiline decreases the resecretion of adrenocorticotrophic hormone. For exogenous depression, the serotonin reuptake inhibitors are recommended. However, there will be an increase in the frequency of panic attacks, which might accompany the time of increase in serotonin synaptic concentration. This is why it is sometimes useful either to use molecules possessing sedative properties, such as clomipramine, or to combine an anxiolytic with the antidepressant. The serotonin reuptake inhibitors of interest are fluvoxamine (0.5–4 mg/kg) or even fluoxetine (1 mg/kg). As in reactive depression, the only interest in behavior therapy is supporting the resumption of initiative.

Hyperattachment syndrome in adults

Description

This is a clinical condition which, by its pathophysiological characteristics, is a chronic depressive disorder, but whose symptomatology may sometimes be confusing. The clinical picture at first resembles that of separation anxiety, since there is a hyperattachment. However, in this syndrome the problem was acquired as an adult. Moreover, there is often a great deal of furniture destruction, autonomic disorders are systematically present, and this also occurs outside the separation episodes.

Apart from the above, this syndrome resembles more of an anxiety disorder. But a careful semiological approach will reveal the existence of clinical signs characteristic of chronic depression. Only proximity to the object of attachment limits the appearance of presleep anxiety in certain patients, as well as sudden awakening. However, this stabilization by hyperattachment usually has a limited duration, so the disorder continues its progression. Finally, it must be noted that

the phases of excitement during which the dog damages the furniture are limited to certain periods of separation from the object of attachment. These are not periods with a systematic trigger, as is seen in separation anxiety.

Diagnosis

Diagnosis is based on compulsory symptoms and at least two specific symptoms.

Compulsory symptoms

- The appearance of a hyperattachment in an adult whose behavioral development is normal
- Dysorexia
- An advancement of paradoxical sleep
- The presence of primary organic manifestations tending to chronicity.

Specific symptoms

- Destruction of furniture during separation from the attachment figure
- Vocalization during separation
- Prehypnotic anxiety
- Sudden awakening with enuresis and/or encopresis
- The development of a departure and/or welcome ritual.

Differential diagnosis

Differential diagnosis includes separation anxiety, paroxysmal anxiety, intermittent anxiety, hypoadrenocorticism, and digestive disorders. Regarding separation anxiety, although this is a condition that develops during the prepubertal period, it is possible to find dogs that have not been treated and thus display a clinical picture that persists into adulthood. The differential diagnosis relies on highlighting the aberrant development when the phase of detachment does not appear and also on the absence of dyssomnia: here, insomnia is typical of the anxiety (sleep with normal cycles). The issue of paroxysmal anxiety is a concern when the dog belongs to a breed in which this anxiety has a digestive expression (German shepherd dogs and Mastiffs). But this form of anxiety is characterized by its clinical expression "by means of crises" only involving the autonomic system, with the exclusion of any behavioral disturbance. It is the absence of episodic aggressiveness that allows the distinction from intermittent anxiety. Hypoadrenocorticism is usually expressed by a combination of a decrease in reactive dynamism, episodes of diarrhea, and insomnia. The differential diagnosis, in addition to adrenal function, relies on the absence of hyperattachment and the advancement of paradoxical sleep in these patients. The confusion with digestive disturbances can only result from a superficial clinical examination. Moreover, during a somatic illness, neither hyperattachment nor dyssomnia is observed.

Prognosis

Only emotional factors or lack of patience by the owners render the cure of this disorder difficult, if not impossible.

Treatment

It is important to know how to coordinate drug therapy and behavior therapy in order to avoid iatrogenic worsening.

Chemotherapy uses either clomipramine (1–4 mg/kg) or fluoxetine combined with dog-appeasing pheromone.

Therapy aims to break the hyperattachment and relaunch initiative. But detachment therapy, identical to that used in the treatment of separation anxiety, must not be set up as long as the chronic depressive state is still in place. One must remember that the dogs seek hyperattachment for protection, and that any misplaced break is likely to worsen the disorder. This technique is complemented by play, work, or agility exercises. In some cases owners seem unable to assume, or sometimes tolerate, detachment therapy.

Dysthymia in English Cocker spaniels

Description

This is a condition with a remarkable sociocultural component. English Cocker spaniels are one of those breeds of dogs whose physical attributes are highly appealing to some people. Fictional characters such as Lady in Walt Disney's *The Lady and the Tramp* are illustrations of this affecting image and have done a lot to promote Cocker spaniels. And yet suddenly, the idyllic relationship is broken. This has been enough for some authors to speak of the "Jekyll and Hyde" Cocker spaniel. In fact, English Cocker spaniels suffering from this condition display a clinical picture that is unarguably that of a dysthymia, which develops first in a unipolar direction and eventually becomes bipolar. But this aspect is not sufficient to characterize the dysthymia of Cocker spaniels. The most spectacular factor is undoubtedly the development of the productive phase. The dog, from the beginning of this phase, grabs a random object. This may be an object belonging to a family member or the dog's toy, or even a neutral object such as a tea towel or tissue. This object becomes inseparable from the dog; it takes it everywhere and it is always placed where the dog can watch it. Some dogs can watch their object for hours without moving. They will not tolerate this object being watched or anyone walking past it, and will attack anyone who makes that mistake. However, this aggression has no sequential organization. The bite can be preceded by short growls, but there is no appeasement or renewing of the bite, whatever the reaction of the person attacked. Finally, other aggressions have no relation to the presence of the grabbed item. These incidents are identical to those recognized in the other dysthymias.

Diagnosis

The following symptoms must be met:

- A unipolar (productive) or bipolar state (alternating productive with nonproductive phases). Nonproductive phases reflect a depressive state
- Productive phases characterized by the appropriation of an item that is taken everywhere; looking at the object or approaching it triggers aggression.

Differential diagnosis

The differential diagnosis should include a sociopathy. This is the condition with which confusion is easiest in Cocker spaniels. Because of owners' emotional attachment to their pets, they frequently have ambivalent hierarchical relationships with their dog. This results in a sociopathy in which aggression dominates the clinical picture. But, in this case,

the aggression contains the characteristic triad of sociopathies. We must however insist on the fact that sociopathies are not mutually exclusive and that any sociopathy in a Cocker spaniel in which there are aggressions with no sequential structure and whose occurrence is unpredictable must encourage clinicians to look for a dysthymia. Failing to take this into account, therapy for sociopathies will prove ineffective.

Prognosis

The prognosis is guarded. Only rarely have we obtained a true recovery. Patients may be efficiently stabilized but this requires lifetime drug treatment.

Treatment

Drug therapy is always required. Two drugs help stabilize the dysthymic disorders of English Cocker spaniels: selegiline (0.5 mg/kg) and either lithium gluconate at 0.05–0.015 mmol/kg or lithium carbonate at a dose of 3 mg/kg or 0.01 mmol/kg to start but then titrated to appropriate serum levels.

References

1. Mills DS. Medical paradigms for the study of problem behaviour: a critical review. *Applied Animal Behaviour Science* 2003;81:265–77.
2. Reisner IR. An overview of aggression. In: *BSAVA Manual of Canine and Feline Behavioural Medicine*. Gloucestershire: BSAVA; 2002. p. 181–94.
3. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 4th ed. Washington, DC: American Psychiatric Association; 1994.
4. Pageat P. *Pathologie du comportement du chien*. 2nd ed. Paris: Editions du Point Vétérinaire; 1998.
5. Dramard D. *Vade-Mecum pathologie du comportement du chien et du chat*. 2nd ed. Paris: Med'Com; 2007. p. 27, 29–30, 36, 37, 42.

Recommended reading

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|--|---|--|
| Beata C. <i>La Psychologie de chien</i> . Paris: Odile Jacob; 2004. | Dramard V. <i>Vade Mecum Pathologie du comportement du chien et du chat</i> . 2nd ed. Paris, France: Med'Com; 2007. | Mege C, et al. <i>Pathologie comportementale du chien</i> . Paris: Ed. Masson. Colle Abreges; 2003. |
| Beaumont E, Massai N. <i>Guide pratique du comportement du chien</i> . Eyrolles; 2006. | Mege C. Behavioral disorders in growing dogs and cats. <i>Proc NAVC</i> 2006;149–51. | Pageat P. <i>Pathologie du comportement du chien</i> . 2nd ed. Maisons-Alfort, France: Le Point Vétérinaire; 1998. |
| Dehasse J. <i>Tout sur la psychologie du chat</i> . Paris: Masson, Coll Abreges; 2003. | | |

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Reducing stress and managing fear aggression in veterinary clinics

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Introduction: the problem with the status quo

Imagine this. You're grabbed out of your home, stuffed into a box, thrown in a car, and driven to a location where you're left in a strange room. It's a room with alien smells, screams that sporadically pierce through the walls, and eerie figures wandering about. You don't know why the human you once trusted brought you here, but you're not sure you should trust her to help you now.

Every day, pets are brought to our hospitals in this state of confusion and fear and we expect them to remain calm and cooperate for procedures. We poke them and prod them and carelessly flop them into various positions when they have no clue what we want. Then, in the name of speed, we react to the struggling pet by imposing some type of "death grip" hold instead of taking a step back and evaluating whether a more thoughtful approach might work better.

Many participants in this typical scenario might ask, "What's the harm? It's what we've always done." Well, the harm is threefold. First, dog and cat bites as well as cat scratches are often the top causes of veterinary hospital staff injuries. Force-based techniques and crude handling skills undoubtedly play a significant role in these statistics. Second,

for those of us who vowed to first "do no harm" as a veterinarian, every time we force pets in this manner or even handle pets in a rushed, careless way, we risk breaking this promise. We may send the patients home medically better, but they may also be leaving with a "behavioral injury." That's because, with each bad experience, difficult behavior and fear can worsen until they are no longer treatable. Even more ominous is the fact that a bad experience at the veterinary hospital can cause some pets to be worse with people overall. For an animal that comes in and is already slightly fearful of unfamiliar people or who has a genetic predisposition toward this trait, one bad experience can exacerbate the situation, from a pet that's just fearful of some people occasionally to one who has a generalized and pronounced fear and suspicion of anyone new. Or worse, one that becomes fear-aggressive. The veterinary staff could, potentially, be the inciting factor that triggers this dramatic turn for the worse, which ultimately can contribute to the decision to euthanize (Figures 23.1 and 23.2).

A third harmful sequel is to the credibility of the hospital staff and the perception of how caring they are. Imagine if you took your child to a dentist. Which would you choose — the one who was in a rush and strapped your screaming child down in order to get the job done, or the one who set



Figures 23.1 and 23.2 Unskilled handling can result in bites and scratches, a pet that is behaviorally more fearful and aggressive at future visits, and a loss in credibility for the hospital staff. The cat in this photo is acting aggressively because it is being “scruffed” – a common procedure to which many cats react adversely. This same cat does much better when a towel wrap is applied. It remained calm for a cystocentesis later while in its towel. (Courtesy of Dr. Sophia Yin.)

up the hospital to look inviting and knew just the right words to say to put your child at ease? The first dentist would be seen as cold and concerned most about money. The second would be seen as caring, more skilled at handling children, and more credible. Now imagine what’s going on in the child’s mind. The restrained child is likely to have a lifelong fear of seeing a dentist and as an adult may no longer seek dental care. The parents would also be less apt to bring the child back for regular appointments because they, too, dread the process due to its effect on the child and the embarrassment of having others see their child’s difficult behavior. On the other hand, the child that went to the child-friendly dentist would become increasingly easier to treat and her parents more likely to keep up the regular visits.

The solution: set up the hospital and handling to help the patient feel comfortable and safe

One might think that switching from the status quo of powering through procedures to a low-stress handling and hospital environment would take an impractical amount of effort and waste precious time. In reality, many of the changes

are a matter of setting up a more inviting hospital; others are a matter of approaching animals correctly and learning to handle them or support them in ways in which they feel comfortable and safe. As a result, the changes often don’t take more time, they just require more skill. For cases where more time is needed to train pets that the procedures and environment are safe, this time can be turned into a value-added service that is carried out by paraprofessional staff and assigned an appropriate fee. It’s something that does not have to be sold to the client, just offered as part of the best practice, just like preanesthetic blood work or parasite screening. Owners can be informed of their options and the potential consequences.

This chapter provides a six-step approach to setting your hospital up to help reduce stress while increasing hospital efficiency. The predominant idea is that if we provide an environment where the animal feels comfortable and safe while also providing clear guidance regarding what we want the animal to do, the pet will be less fearful and more cooperative which in turn will help us get through the procedures more quickly both now and on future visits. This chapter represents an overview of each principle. For a more detailed description and techniques refer to the book and DVD set: *Low Stress Handling, Restraint and Behavior Modification of Dogs & Cats* (CattleDog Publishing, www.lowstresshandling.com). The six steps are as follows:

1. preparing the patient (what owners can do at home)
2. preparing the hospital
3. greeting the pet appropriately
4. handling the pet in a calm, skilled manner
5. desensitizing/counterconditioning (DS/CC) the fearful pet
6. scheduling paraprofessional sessions as an added-value service.

Step 1: before the patient comes in: what the owner can do at home

Patients are often anxious even before entering the hospital and by the time they’re in the exam room, they may be ready to attack. This may be because the pet was chased around the home to catch it and force it into the carrier or because the pet has never been habituated to car rides.

For all new clients as well as puppies and kittens the standard response from the receptionist making the appointment should be, “Is your pet comfortable riding in the car and if she’s transported in a carrier, does she view the carrier as a safe place? We’re asking because we want your pet to have the most pleasant experience possible and this is most likely to happen if she’s relaxed on her way over and enters the hospital in a calm, relaxed state.” If their answer is no or they are unsure, the next step is to send them to your website to download a handout or provide verbal instructions on training their pet to love their carrier and to love car rides.

Counterconditioning and desensitization to crates and car rides

The basics of teaching pets to view being in their carrier or car ride as a positive event is to pair each one with something

they already enjoy, such as food. When we make this pairing, we are using a technique called *counterconditioning* (CC), so called because we are countering a previous association – that of fear or dislike – with the car or crate. Generally we also need to add in *desensitization* (DS). That is, we can't just put the animal in the crate, shut the door and offer food, because the animal may be too scared or distressed to eat the food. So we often have to start with the stimulus (the car or crate) at a level that the animal can tolerate and when it shows no fear to that stimulus at that level we can increase the intensity systematically.

A common misconception is that DS/CC takes a long time. When done systematically it can go quickly, sometimes in less than a week. The standard procedure for teaching pets to go into their crate willingly is just to feed their regular meal in the crate. To make the cage more inviting and comfortable, add a blanket, towel, or perhaps Feliway or Adaptil spray. If they won't immediately go in, then start with the food outside the crate. Once they readily go near, you can start placing the meal inside the crate. First place the bowl near the entrance so the pet only has to place its head and shoulders in, and then when it's comfortable, move the bowl further in. The objective is to only move the food further in once the pet readily goes into the crate to the current distance of the food bowl. Once it is comfortable entering, occasionally sprinkle treats inside the crate for the pet to find throughout the day. With some cats it is even simpler since they may voluntarily enter and explore any new crate or box, which can then be rewarded with food. When the pet has a well-established positive association it will go in and lie in the crate on its own with the door open. The behavior can be put on cue by saying "kennel" or pointing at the kennel as the pet enters, and then tossing in a treat.

Car rides

A similar procedure can be used during which the pet is first put in an unmoving car and given treats. Once it's readily eating (a good indicator of comfort level), take short trips that end in locations the pet likes. Cats should be secured in a carrier and dogs either tethered to a seat belt or in a carrier. Once they are in, give treats frequently enough to keep them in a positive emotional state.

For some pets, additional techniques may help. Placing a Calming Cap (thundershirt.com) that covers the eyes, hindering vision, can help the pet feel calmer or more relaxed. For dogs that get car sick, consider using maropitant citrate (Cerenia, Pfizer Animal Health). Maropitant citrate should be given 2 hours prior to travel and after food has been withheld for 1 hour. The treatment lasts for 24 hours so can be given the night before, at least 1 hour after dinner. Some nervous dogs also do better if they wear an Anxiety Wrap (Animals Plus), Thundershirt (Thundershirt), or tight-fitting T-shirt. Such products work based on the idea that the tightness of the fit provides comfort and has a positive effect on the dog. Another option is using Adaptil or Feliway (Ceva Animal Health) for cats. These pheromones have marked calming effects on some dogs and cats. And of course, careful driving is a must since a bumpy ride can provide pets with a bad experience.

For those people who are traveling alone and the pet will take treats, treats can be placed in a Kong toy (canned food,

cheese or peanut butter works best). Alternately a Manner's Minder (www.mannersminder.net) can be used to dispense treats by remote control or automatically at regular intervals.

Step 2: preparing the hospital

Once the clients have done their part to help their pets, there are many ways we can help them too. Begin with setting up the hospital environment so that it appears inviting and safe from the pet's point of view. When the animal enters your hospital, what is the first thing it sees? Is it quiet and calm or full of barking dogs and hissing cats? Remember that the environment the pet enters sets the tone for the appointment and the mood for its entire stay. This environment includes all rooms of the hospital, not just the first room it sees.

The entry area and waiting room

The entry area and the waiting room may be the most important rooms in the hospital, in that they determine the pet's first impression. If a cat's first experience is a dog nose at its carrier you may be hard-pressed to convince the cat that your hospital is a safe place. In general it's a good rule for all pets to be in carriers or otherwise controlled. So the first sign the clients should see is one thanking them for controlling the pet in a crate or on a leash.

Ideally a hospital should have a separate cat area and dog area and additional visual dividers within each section. That way, those pets who are afraid of other animals can feel somewhat safe. If your hospital has not been built with separate areas already, inexpensive portable dividers can be strategically placed. Within those species-specific areas, further divide the space by using half-walls, information displays, screens, planters, fish tanks, and partitions so pets can avoid direct eye contact with other pets. Alternately you might schedule separate times for dogs and cats. Pheromone diffusers in the waiting room may also help calm pets (see [Chapter 9](#)).

Scale

One predictable stress that routinely awaits dogs is the step-on scale. Many dogs balk at the sight of this uncertain item, and are then forced on. If a towel or rug with a nonslip liner is placed underneath, many dogs will be more comfortable stepping on. And if tasty treats are strategically placed by so that owners can use the treats to lure the pet on, the weigh-in can actually be a positive experience instead of a scary one.

The exam room

Most exam rooms are designed to be clean and sterile, and because of this they are also cold and uninviting. A few simple changes can turn the room into a comfortable, safe place that both humans and pets enjoy. Placing a washable throw rug or fleece pad on the floor will go a long way to making pets feel at home. You'll see the difference almost immediately since a majority of pets will choose to station themselves on the rug. Similarly, for animals placed on the

exam table, simply having a nonslip covering or warm padding can turn a quivering, cowering pet into a more relaxed one. A towel can also be placed on the cat scale because cats frequently choose to sit on these due to the raised sides which provide them some security.

Layout and type of furniture are also important. Avoid chairs and objects that pets can hide under, making it difficult to get them out. Fearful animals can be more aggressive once they have stationed themselves in a defensible space. The desire to remain in their safe spot, combined with our need to reach for them, can lead to defensive aggression. An exam table that folds up or moves out of the way provides more floor space for you to move around and adjust your height and body position to appear less threatening. It's also useful because some pets do much better when examined on the floor.

Rooms should be stocked with tasty treats, preferably semimoist treats or freeze-dried liver or chicken, and a canned spray cheese which you can spread on a wooden spoon or tongue depressor. Some veterinarians are concerned that treats may cause lipemia, altering blood results. Postprandial triglycerides peak 2–6 hours after a meal, which is generally well after the blood draw. Always check with pet owners and the medical history to ensure that there are no medical (e.g., diabetes mellitus, hyperlipidemia, food intolerance), genetic (liver treats are typically not given to Dalmatians on purine-restricted diets), or cultural (pet maintained on a vegetarian, kosher, or halal diet) reason for not offering specific treats to pets. Having a few rubber or vinyl squeaky toys available can be a huge benefit for dogs that love toys, or can't consume the treats you have available. Some who are tentative when offered treats will suddenly relax when they see a toy. For cats the favorite treats tend to be tuna, baby food, canned food, soft cheese, and Greenies, as well as both some moist and dry cat treats to account for individual preferences. In hospitals designed for comfort and safety, the overwhelming majority of dogs, and many cats, will accept treats. Clients can be asked to bring their pets in hungry by skipping the previous meal and also to bring their pet's favorite treats.

Rooms should have a handy supply of towels, especially when dealing with cats. One of the best techniques for putting fearful cats (and some small dogs) at ease is providing a way for them to hide. Often when allowed to hide under a towel, an entire examination can be done on an otherwise untreatable cat (Figure 23.3).

Treatment areas and kennels

It's easy to keep low-stress environmental design at the forefront of your mind when it pertains to the waiting room and exam room. But for many, it's a greater challenge to remember that the same rules apply to the treatment and kennel area. The treatment area is frequently the busiest and noisiest place in the hospital as well. Unfortunately, this is also the area of the hospital where some of the sickest animals are kept so that they can be closely monitored.

For treatment areas, first consider how to control the noise, especially sharp banging of cages and sudden vacuum and clipper sounds. Some cages actually have sound-dampening designs so that they open and close more quietly. But if they don't, then staff must take special care to open them quietly.



Figure 23.3 One of the best ways to keep the environment low-stress for cats is to let fearful cats hide. An entire exam can often be accomplished with the cat hidden under a towel. (Photo courtesy of Dr. Sophia Yin. From *Low Stress Handling, Restraint and Behavior Modification of Dogs & Cats* by Sophia Yin, DVM, MS, Cattle Dog Publishing, 2009. www.lowstresshandling.com.)

White-noise machines can help dampen sudden loud sounds. Alternatively consider purchasing Through a Dog's Ear CD (www.throughadogsear.com), which includes music that is designed to calm dogs. The music has been altered based on the principles of bioacoustics and entrainment which state that external rhythms can affect body rhythms. So, just as horror-film movie music can be designed to build tension and fear, calming music can help entrain a physiologic state compatible with being calm. While there are no published studies on the effects of the CDs on dogs to date, the cost is relatively modest and many people find the music pleasant.

A quiet environment is especially important for cats since they tend to be more fearful and less socialized than dogs. They should be housed away from noisy dogs, and cats staying in cages should be provided a litter box and a separate place to hide, such as their own cat carrier, and Feliway.¹ Cardboard boxes, towels rolled up, or just a towel covering a portion of the front can help.

Barking dogs should be kept in locations where they can be more relaxed and thus quieter. Constant barking will cause other pets as well as staff to become agitated. In some situations, an antibark spray collar (Premier Pet Products) may be used, especially on dogs who might appear to instigate the other dogs, but only if it is immediately effective and it doesn't stress the pet.²

Step 3: greeting the pet appropriately

The pet's first impression of the hospital is based not only on the environment but also on how people interact during the greeting. Arguably, the number one reason people get

bitten by unfamiliar dogs is that they approach the dog incorrectly. The person approaches too quickly, crowds the pet, or looms over it. While a socialized dog might tolerate this inappropriate greeting, a fearful, less confident pet will feel threatened. Under pressure the dog may freeze, cower, flee, or it might defend itself. Barking and low growls can progress to lunging and biting.

Some owners and staff respond by reprimanding or punishing the dog. This can cause the behavior to escalate and the dog to become more aggressive immediately. Other dogs may hide outward signs of fear, especially from their own family, but their internal fears remain. As a result, the dog may no longer show signs that it wants people to back away, but instead when it can't control its fear, it bites with no warning signs, causing people to claim that it "bit out of the blue." (To download free posters on the body language of fear in dogs, and how to greet a dog and what to avoid, and access other dog bite prevention resources, go to: <http://drsophiayin.com/blog/entry/free-dog-bite-prevention-week-resources>).

Why do friendly people look scary?

Staff often can't understand why dogs would be afraid of them when they're obviously making friendly human gestures. But if you look at it from a different viewpoint, it becomes clear. Say you're afraid of spiders and your friend shoves her pet tarantula in your face. If she simultaneously reassures you: "She can't cause harm, she's just an innocent baby," would you suddenly feel safe? Probably not. In fact the only way you might get used to the spider is if you greeted it at your own pace. That means it would have to be on a table or in some location where you could control your distance from it. Then when you were ready you could gradually approach for a closer look and perhaps even touch it.

The same goes for dogs. All dogs are not outgoing or used to meeting strangers, especially if they were already shy when adopted or have received minimal socialization with a variety of humans. If you walk into a dog's personal space or even stand and reach out to let it sniff your hand or to pet the dog, it may feel threatened or unsure of your intentions. To the dog, your hand might as well be a monster's hand (Figure 23.4). If, however, you stand straight up or crouch down on one knee while looking or facing your body away, then the dog can approach and sniff you at its own rate (Figure 23.5). You can speed up the friendship if you drop tasty treats close to you in order to help the pet associate you with something positive. If the dog is taking these without any hesitation, you can hold treats in your hand while averting your gaze so that it can take them.

Staff members often manage to get through the initial greeting with the dog and are even able to give treats, but then make a quick or inappropriate move that scares the dog into snapping or withdrawing. This is still similar to the situation with the giant spider. Even when you're finally comfortable enough to touch the tarantula, if it suddenly moves its mouthparts or waves one of its legs in the air you might jump out of fright. These movements may conjure images of the tarantula leaping at you and taking a bite whereas to the tarantula the movements may just be a subconscious change in position or even a signal that it's your friend. So the trick



Figure 23.4 Often we reach out in a friendly gesture, not realizing how scary we may look to the fearful pet. This type of approach is enough to cause a pet who is unfamiliar with you to protect itself by snapping or biting. (Courtesy of Dr. Sophia Yin. From *Low Stress Handling, Restraint and Behavior Modification of Dogs & Cats* by Sophia Yin, DVM, MS, Cattle Dog Publishing, 2009. www.lowstresshandling.com.)



Figure 23.5 If you stand or kneel with your side to the dog and avert your gaze, you will look less threatening. Let the dog approach at its own rate. You can also toss treats or let the dog take the treats out of your hand while still averting your gaze. (Courtesy of Dr. Sophia Yin. From *Low Stress Handling, Restraint and Behavior Modification of Dogs & Cats* by Sophia Yin, DVM, MS, Cattle Dog Publishing, 2009. www.lowstresshandling.com.)

to ensuring that you don't frighten the dog even after the initial greeting is to gradually get the pet used to you in different positions. Avoid leaning over the dog or reaching over its head or grabbing and hugging it so it feels confined. Instead move slowly and smoothly in order to give the pet a chance to back away.

Similar rules pertain to greeting cats. When greeting, it's best not to stare into their eyes or act in a way that makes them shy away. But even before this, you need to address getting cats out of their carriers. One common method is for people to dump the cat out against its will. A method that will keep the cat calm is to take off the top of the carrier. From there you can examine the cat in its crate or place a towel over it and lift it out.

Applying greeting principles to getting pets out of cages

The same principles apply to getting fearful dogs out of cages. Avoid squaring off and reaching for the dog, causing it to go into an emergency escape mode. It's better to have your side to it or move closer by backing up towards it, holding a loop of leash for it to walk into. When approaching the dog to get situated, move slowly enough so that you don't incite avoidance or aggression, but move confidently so that you don't cause the pet to become more fearful (www.lowstresshandling.com).

Step 4: handling the pet in a calm, skilled manner

Once we have greeted the pet correctly and made a good first impression, it's important to know how to handle the animal in a way that guides it into the positions you want rather than in ways that cause it to become confused. Frequently when we go to restrain a pet we cause it to struggle just by manipulating it in an uncomfortable or confusing way. We assume that it knows what we want, when the manner in which we are moving it may just frighten or confuse it. For instance, imagine you're with a physical therapist and he grabs you by the shoulder and pushes you backwards because he wants you to sit in a chair. Or, he may pull your legs out from under you because he wants you to lie on your back. Not only would you be confused, you might even be angry and retaliate in some way or refuse to return. Our pets are surprisingly forgiving; below are several principles that can help.

First, it's important to control movement and prevent the dog from pacing or squirming because doing so may increase its arousal level or anxiety, causing it to become more reactive. This can easily be done by shortening the leash but holding it at a consistent length so the pet knows what to do to keep the pressure loose. What people tend to do is lengthen and shorten the leash subconsciously by letting their leash-holding arm swing around, such that the dog has no predictable control over whether the leash is tight or loose and more comfortable (Figures 23.6 and 23.7).

With cats the traditional method for restraint is scruffing. The American Association of Feline Practitioners' feline-friendly handling guidelines³ (<http://catvets.com/professionals/guidelines/publications/>) generally recommend against scruffing and many cat-only veterinarians and



Figure 23.6 This dog is able to pace and become overly aroused because the technician is failing to provide clear guidance.



Figure 23.7 Once the technician shortens the leash and holds it close to the dog's collar it understands it should hold still. It calms down and sits on its own. (Courtesy of Dr. Sophia Yin. From *Low Stress Handling, Restraint and Behavior Modification of Dogs & Cats* by Sophia Yin, DVM, MS www.lowstresshandling.com.)

veterinary behaviorists avoid scruffing as they feel it may cause stress. Alternatives to scruffing include putting a hand on the front of the cat's chest, examining the cat where it is comfortable, such as in its carrier or on the scale, or under a towel, or placing a specific towel wrap restraint around it in order to help it feel comfortable so that it does not feel a need to struggle. Regardless of the technique used, choose one that makes the cat feel relaxed and effectively works to control squirming.



Figure 23.8 Instead of flipping dogs and cats onto their sides in judo-like throws, support the pet so it feels balanced and safe. In this case the technician slides the dog down her legs. (Courtesy of Dr. Sophia Yin. From *Low Stress Handling, Restraint and Behavior Modification of Dogs & Cats* by Sophia Yin, DVM, MS, Cattle Dog Publishing, 2009. www.lowstresshandling.com.)

Second, when you're trying to control movement and guide a pet into different positions, it's important to put pressure and guide in the right way. For instance, if you try to get a dog to sit by pushing pressure cranial to or on its hip you will just cause it discomfort and it may become confused and protective. If you want the pet to change positions from standing to lateral and do so in a manner that causes it to struggle and hit its head, it might be less likely to allow you to guide it in other position changes.

In order to sit, the hind legs need to bend, the weight needs to shift from the front legs to the back, and the front end needs to shift up while the back end shifts down. So, one way to get a dog to sit is to raise the front end slightly with gentle pressure across the chest, while placing gentle pressure on the rear end just above the tail base. These signals are clearer (Figure 23.8).

Steps 5: desensitization and counterconditioning the fearful pet

When all of the above steps are followed, clients should notice a huge difference. Their pets, who would be nervous in another hospital, will start the consult off comfortable in the low-stress environment of a pet-centric hospital. However, some pets will need more. They may need a couple of minutes of tossing treats to them while your technician is taking a history; they may need to be trained during the consult to love wearing a muzzle so that they don't become more difficult to handle once one is placed; or they may need to be trained to accept injections, pilling, and other procedures the staff or client may need to provide. The basics of DS/CC are simple and straightforward, although there are many nuances that affect the speed and rate of success. Some DS/CC procedures can be done within minutes in the hospital, thus saving the need for extra technicians or sedatives. The greater the staff's skills, the quicker the process can go.

The process of getting dogs used to staff on initial greeting was described earlier. To describe DS/CC we can use

injections as an example. Start by making sure the dog is hungry. Use semimoist treats or baby food, canned cat food, peanut butter, or cheese spread. First, smear food on a syringe and let the pet lick it off. The goal is that the dog immediately sniffs the syringe and then eats the treats. If it's afraid of the syringe, you'll have to lay the syringe down and put treats around the syringe instead. Let the pet eat the treats for 3–10 seconds and, as it's still eating, pull the syringe away from the animal so it's now clearly out of reach. The goal is that the pet is looking at the syringe or at you because it wants more treats. After the pet has waited for treats for another 3–10 seconds, repeat the procedure. The goal in waiting is that it learns that treats and the syringe go together. When the pet is reliably licking the syringe and not afraid of it, we can now proceed to getting it used to having its skin tented and poked. While the pet is eating treats, tent its skin, first gently and then more roughly and then while pinching the skin. The goal is that the entire time you're handling the pet you're doing so at a level where it fully focuses on eating. The pet's mouth is actually licking the can or bottle or spoon or up against your hand so that you have full control of where its head is. When it's reliably only focused on food with one step, then go the next step of making the handling more intense. In the final stages you also poke with the syringe while it's eating. And then finally you give an injection. If you systematically increase the stimulus level while staying under the pet's threshold for reacting, and you gave clear times when it's getting treats and other times when it's waiting for more treats while not being handled, this process can go very quickly.

Step 6: scheduling DS/CC technician sessions as an added-value service

If we note that a pet has a problem during any stage of the hospital visit, it's important to inform the owners and offer a method of improvement. For instance, if you found an ear infection in a dog who came in limping due to a broken leg, you'd inform the owner and offer a treatment. Similarly, if you find a dog that shows fear of the hospital or a procedure, you should give owners the option to engage in paid (or value-added) visits in which a technician walks them through a DS/CC plan. This may be DS/CC to the veterinary hospital, to technicians in the hospital, to specific handling procedures such as toenail trim or enjoying taking their pills, or to allowing a muzzle to be put on. The technician will be explaining the timing of the treats and how to judge from the pet's body language whether all is going well, and the owners will see that it's not a crude process where you just give treats.

Sessions can run about 20 minutes. Technicians can start with just procedures they feel comfortable performing and then add on other DS/CC procedures. Clients often find conditioning dogs to wear muzzles, receive injections, or allow grooming to be easily mastered.

To take pressure off the hospital staff and put the responsibility on the clients, they can be given a consent form that states that you recommend their pet receive behavior modification and that you are offering these services. If they so decline and want you to perform procedures such as muzzling or restraint in spite of the fact that it may cause their

pet to become behaviorally worse both at the hospital and in other situations, they must acknowledge that this is their choice.

Managing fearful and aggressive pets

If the pet is fearful or aroused and cannot be sufficiently calmed during the visit, injectable sedatives should be considered. In fact, sedatives should be used before the pet has a chance to become highly aroused or reactive, since they have a more consistent effect when used at an early stage. Sedatives may be necessary, not only for the safety of the owners and staff, but also for the health and welfare of the pet. By preventing further fear, arousal, discomfort, and psychological trauma, we can avoid a highly negative experience for all.

For mild fear and anxiety, the use of pheromones prior to the visit and in the veterinary clinic might be sufficient. Benzodiazepines prior to the visit might also be helpful. The type and dose of benzodiazepine should be tested at home in advance to determine the effective dose and time it takes to become effective. Be aware that for some pets benzodiazepines might disinhibit, resulting in an increase in aggression (see [Chapter 8](#)). For more fearful and potentially dangerous pets, a combination of a benzodiazepine and acepromazine or phenobarbital might be used. Although not as profound as injectable sedatives, effects in cats might also be achieved with transmucosal dosing of 20 µg/kg of buprenorphine plus 20 µg/kg dexmedetomidine or either oral or sublingual ketamine (2.5 to 20 mg/kg).⁴⁻⁶ Dogs can be given oral or transmucosal dexmedetomidine or medetomidine (mixed with maple syrup or honey) at 20–40 mg/kg or detomidine oral gel at .35 to 1 mg/m². (vin.com)⁷ It's also important for staff to realize that a pet sedated with oral medications may appear sedated but caution should be exercised as some pets will be suddenly aroused such as by loud noises. As a result, pets on oral sedatives must be cautiously monitored for the possibility that they may unexpectedly lunge or snap. For other off-label oral suggestions, see http://www.vasg.org/oral_sedation_for_difficult_dogs.htm.

Pharmacologic management of fearful and aggressive pets

When oral sedation is not sufficient, intramuscular sedation is usually the safest and most effective means of restraint. While chamber anesthetic can also be effective, safety for the pet and gas exposure in the environment make intramuscular agents a better option for most pets. Training dogs to wear a basket muzzle or leash and head halter prior to the visit provides a quick and safe method of administering intramuscular injections. (To download a step-by-step handout on this go to <http://drsophiayin.com/resources/newsletters> and download the volume 2 newsletter and handouts.) The effective use of a head halter during veterinary visits is displayed by Dr. Gary Landsberg at abronline.org. The Calming Cap might also help by reducing visual stimuli. Muzzles are also available that cover a cat's mouth and eyes; however, most cats can be injected while remaining in a carrier with the top removed with the gentle use of a thick towel wrapped over them, possibly with the aid of gloves for increased safety. A technique referred to as "clipnosis" might also be

effective for immobilizing some cats.⁸ The technique, which involves placing a metal or plastic clip on the back of the neck, has been reported to restrain and calm some cats but only those that relax or remain immobile when scruffed. As a last resort, pulling the dog's leash through a partially closed door to control its head, or a capture net for cats may be necessary for the very aggressive, dangerous pet that needs to be immobilized in order to give a sedative injection. These techniques must be practiced beforehand so that they can be performed in a skilled manner. Step-by-step photo-illustrated instructions as well as a video of the techniques can be seen at www.lowstresshandling.com.

Detailed information on drugs, including indications, contraindications, and doses can be found at vasg.org and in the veterinary literature.⁹ Optimal and balanced sedation can generally be achieved with butorphanol, combined with low-dose dexmedetomidine (unless cardiac disease is present) and midazolam (which may provide anxiolytic, muscle relaxation and possible amnesic effects). In more fractious patients the dexmedetomidine dose can be increased and ketamine added¹⁰ ([Table 23.1](#)). Since dexmedetomidine and midazolam are reversible, this can add an extra measure of safety and allow for a quicker recovery. Another option is to substitute the butorphanol for other narcotics that might be preferable for the procedure ([Table 23.2](#)). For

Table 23.1 Injectable drugs for intramuscular sedation (used in combination)^{1,2}

Drug	Dog	Cat
Butorphanol ^a	0.2 mg/kg (range 0.1–0.4 mg/kg)	0.2 mg/kg (range 0.1–0.4 mg/kg)
Dexmedetomidine ^{b,c}	0.002–0.01 mg/kg	0.002–0.01 mg/kg
Midazolam ^d	0.05–0.2 mg/kg	0.05–0.2 mg/kg
Ketamine (if needed)	3 mg/kg	2–5 mg/kg

^aTo substitute other narcotics, see [Table 23.2](#).

^bReversible with atipamazole.

^cIf greater sedation is required, increase dose of dexmedetomidine to 0.01–0.02 mg/kg.

^dReversible with flumazenil at 0.01–0.1 mg/kg iv to effect.

¹www.vasg.org.

²Moffat K. Addressing canine and feline aggression in the veterinary clinic. *Vet Clin North Am Small Anim Pract* 2008;38:983–1003.

Table 23.2 Alternates to butorphanol in [Table 23.1](#)¹

Buprenorphine	0.02–0.04 mg/kg
Morphine	0.2–1 mg/kg (dog/cat)
Oxymorphone	0.05–0.2 mg/kg (dog/cat)
Hydromorphone	0.05–0.2 mg/kg (dog/cat)
Nalbuphine	0.4 mg/kg (canine) – 0.2 mg/kg (feline)
Fentanyl	0.005–0.02 mg/kg (dog/cat)

¹www.vasg.org

example, while butorphanol may provide more sedation, buprenorphine would provide more analgesia. The use of mu agonists such as morphine and hydromorphone has an additional advantage in that they can be reversed with narcotic antagonists. However, transient nausea and postsedation dysphoria are more likely and cats should be monitored for hyperthermia. Acepromazine might be used in dogs instead of dexmedetomidine at 0.03–0.1 mg/kg (to a maximum of 3 mg); however the use of acepromazine in cats provides less reliable sedation. In geriatric and high-risk patients a combination of midazolam and an opioid may be sufficient.

Conclusion

Most of the techniques described in this chapter don't take more time; they just require that staff interact with pets in a more skilled or refined manner and that the hospital be set up with the patient's best interest in mind. Overall, by focusing your hospital's practices around keeping the patient both comfortable and feeling safe, we get back to the roots of veterinary practice. It's about helping pets to be healthier and happier while forging a great relationship with both patients and client.

References

1. Cerissa A, Griffith CA, Steigerwald ES et al. Effects of a synthetic facial pheromone on behavior of cats. *J Am Vet Med Assoc* 2000;217:1154–6.
2. Moffat KS, Landsberg GM, Beaudet R. Effectiveness and comparison of citronella and scentless spray bark collars for the control of barking in a veterinary hospital setting. *J Am Anim Hosp Assoc* 2003;39:343–8.
3. American Association of Feline Practitioners and International of Society of Feline Medicine. Feline-friendly handling guidelines. *J Feline Med Surg* 2011;13:364–75.
4. Santos LCP, Ludders JW, Erb HN, et al. Sedative and cardiorespiratory effects of dexmedetomidine and buprenorphine administered to cats via transmucosal and intramuscular routes. *Vet Anaesth Analg* 2010;37, 417–24.
5. Issabeagloo E, Gharachorlou AA, Ghalahkandi JG. Comparison of sedative effects of oral ketamine and chlorpheniramine in the manner of single and concomitant administration in cat. *Advan Environ Biol* 2011;5:784–9.
6. Plumb D. *Plumbs Veterinary Drug Handbook*. 7th 3ed. 2011. p. 571.
7. Hopfensperger MJ, Messenger KM, Papich MG, et al. Use of oral transmucosal detomidine hydrochloride gel to facilitate handling in dogs. San Diego: ACVB/AVSAB Veterinary Behavior Symposium; 2012, p. 2.
8. Pozza ME, Stella JL, Chappuis-Gagnon AC et al. Pinch-induced behavioral inhibition ('clipnosis') in domestic cats. *J Feline Med Surg* 2008;10:82–7.
9. Moffat K. Addressing canine and feline aggression in the veterinary clinic. *Vet Clin North Am Small Anim Pract* 2008;38:983–1003.
10. Barletta M, Austin BR, Ko JC et al. Evaluation of dexmedetomidine and ketamine in combination with opioids as injectable anesthesia for castration in dogs. *J Am Vet Med Assoc* 2011;238:1159–67.

Recommended reading

- Drobatz KJ, Smith G. Evaluation of risk factors for bite wounds inflicted on caregivers by dogs and cats in a veterinary teaching hospital. *J Am Vet Med Assoc* 2003;223:312–6.
- Jeyaretnam J, Jones H, Phillip M. Disease and injury among veterinarians. *Aust Vet J* 2000;78:625–9.
- Yin S. Low stress handling, restraint and behavior modification of dogs and cats. Davis: CattleDog Publishing, 2009.

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Appendix A

On the accompanying website are sets of handouts and forms that could be useful in practice. Most have been inserted in the text, within relevant chapters. Handouts and forms that are not found within the chapter text can be viewed in [Appendix C](#) and are referred to as [C.1](#), [C.2](#), etc., in the table below.

Handouts

Number	Title	Box/C
H01	Training quiet (barking)	Box 14.2
H02	Training basic commands (cues)	C.4
H03	Socialization tips for puppy owners	C.2
H04	Stereotypic and compulsive disorders	Box 11.2
H05	Guide to crate/confinement training	Box 4.11
H06	Destructive chewing and digging	Box 16.1
H07	Teaching the pet to fetch and drop objects on command	C.17
H08	Behavior modification for fears and phobias toward noises and locations	Box 12.4
H09	Behavior modification for dogs that are afraid of people or pets	Box 12.8
H10	Desensitization and counterconditioning for cats that are afraid of people or other cats	Box 12.9
H11	Counterconditioning to approaches at the food bowl	C.13
H12	Handling and feeding exercises for puppies	Box 4.10
H13	Teaching structured interactive training (SIT) for all interactions	C.14
H14	Puppy housetraining guide	Box 18.1
H15	Litter-training kittens	Box 19.1
H16	Infants, children, and cats	C.11
H17	Infants, children, and dogs	C.10
H18	Socialization tips for kitten owners	C.3
H19	Establishing a healthy pet-owner relationship and communicating with your pet	Box 4.9
H20	Puppy play biting	C.6
H21	Products to manage undesirable behavior	Box 7.1
H22	Using rewards effectively	Box 4.12
H23	Training a dog to settle or relax	Box 7.2
H24	Unruly behaviors in dogs	Box 14.1
H25	Teaching "Leave it"	C.15
H26	Teaching "Watch"	C.16
H27	Basket muzzle conditioning	C.19
H28	Management of separation anxiety	Box 12.12
H29	Steps for optimum social development of puppies and kittens	Box 4.3
H30	Suggestions for environmental enrichment for dogs	Box 4.6
H31	Suggestions for environmental enrichment for cats	Box 4.7
H32	Things the family can do for a picky eater	Box 10.1
H33	Management of pets with noise phobias	Box 12.4

Forms

Number	Title	Form/Table/Box
F01	Aggression release	C.12
F02	Canine behavior checklist	Form 1.1
F03	Behavior consultation questionnaire	C.5
F04	Cognitive dysfunction screening checklist	Form 13.2
F05	Informed consent for behavior-modifying drug use	C.9
F06	Feline behavior checklist	Form 1.2
F07	Evaluation grid of aggressiveness in dogs	Form 22.1
F08	Feline housesoiling therapy worksheet	C.18
F09	Behavior consultation follow-up	C.8
F10	Senior pet screening checklist	Form 13.1
F11	Guidelines for kitten classes	Box 4.5
F12	New puppy or kitten checklist	Form 4.1
F13	Pet selection consultation questionnaire and resource list	C.1
F14	Guidelines for puppy classes	Box 4.4
F15	Behavior observation and evaluation form	C.7
F16	The Age-Related Cognitive and Affective Disorders (ARCAD) scale	Table 13.3
F17	The EDED scale – evaluation of dog's emotional and cognitive disorders	Form 22.2
F18	Basic information checklist for history collection	Table 5.1
F19	Canine behavior history questionnaire (on web only)	
F20	Feline behavior history questionnaire (on web only)	

Appendix B Behavior resources

Available for printing from website

Note that some of the authors listed below are quite prolific; therefore only their most recent or popular titles have been included. However, in most cases, the recommendation of an author is an indication that additional works by the same author would also be recommended. On the other hand, since our knowledge of the field is quickly evolving, choosing an author's newest publications will provide the most updated material. This list is also limited to those texts and products with which the authors are familiar. Additional reading material is also listed at the end of each chapter in the text.

Canine and feline behavioral references for veterinarians and behavior consultants

- Ackerman L. Five-minute veterinary practice management consult. Ames, Iowa: Blackwell Publishing; 2007.
- Askew HR. Treatment of behavior problems in dogs and cats. A guide for the small animal veterinarians. 2nd ed. Oxford, UK: Blackwell Publishing; 2003.
- Beaver BV. The veterinarian's encyclopedia of animal behavior. Ames, IA: Iowa State University Press; 1994.
- Bowen J, Heath S. Behavior problems in small animals – practical advice for the veterinary team. St. Louis, MO: Elsevier; 2005.
- Crowell-Davis SL, Murray T. Veterinary psychopharmacology. Hoboken, NJ: Blackwell Publishing; 2006.
- Dodman NH, Shuster L. Psychopharmacology of animal behavior disorders. Malden, MA: Blackwell Science; 1997.
- Hart BL, Hart LA, Bain M. Canine and feline behavior therapy, 2nd ed. Ames, IA: Blackwell Publishing; 2006.
- Head L, Landsberg GM. Cognitive dysfunction in aged dogs. In: Ettinger SJ, Feldman EC, editors. Textbook of veterinary internal medicine. 7th ed. St. Louis, MO: Saunders, Elsevier; 2010. p. 238–9.
- Heath S, editor. Proceedings of the 7th International Meeting of Veterinary Behaviour Medicine. ESVCE Belgium, 2009, 142–5.
- Hettis SA. Pet behavior protocols. What to say, what to do, when to refer. Denver, CO: AAHA Press; 1999.
- Horwitz DF, Mills D. BSAVA Manual of Canine and Feline Behavioral Medicine. 2nd ed. Gloucester, UK: British Small Animal Veterinary Association; 2009.
- Horwitz D, Neilson J. Blackwell's five minute veterinary consult clinical companion, canine and feline behavior. Ames, IA: Blackwell Publishing; 2007.
- Houpt K, Virga V. Update on clinical veterinary behavior. Vet Clin North Am Small Anim Pract 2003;33:185–453.
- Journal of Applied Animal Behavior Science.*
- Journal of Veterinary Behavior; Clinical Applications and Research.*
- Landsberg GM, Denenberg S. Behavior. The Merck veterinary manual. 10th ed. Whitehouse Station, NJ: Merck & Co, Inc; 2010. p. 1419–57.
- Landsberg GM, Horwitz D. Behavior Advice for Clients. (Book and accompanying CD). Guelph: Lifelearn; 2012.
- Landsberg GM, Horwitz D. Practical applications and new perspectives in veterinary behavior. Vet Clin North Am Small Anim Pract 2008;38:937–1171.
- Landsberg GM, Mills D, editor. Proceedings of the 6th International Veterinary Behavior Meeting and ECVBM-CA. Fondazione Iniziative Zooprofilattiche E Zootniche, Brescia, Italy, 2007.
- Landsberg GM, Nichol J, Araujo JA. Cognitive dysfunction syndrome: a disease of canine and feline brain aging. Vet Clin Small Anim 2012;42:749–68.
- Landsberg GM, DePorter T, Araujo JA. Management of anxiety, sleeplessness and cognitive dysfunction. Vet Clin North Am 2011;41:565–90.
- Landsberg G, Hunthausen W, Ackerman L. Handbook of behavior problems of the dog and cat. 3rd ed. Edinburgh, UK: Saunders; 2012.**
- Lindsay S. Handbook of applied dog behavior and training, vols. 1–3. Wiley-Blackwell; 2005.
- McGreevy PD, Boaks RA. Carrots and sticks; principles of animal behavior training. Cambridge: Cambridge University Press; 2007.
- Messner J. The Kinderpuppy course – a curriculum for instructors. Ottawa, Ontario: PavSki Canine Educational Resources; 2007.
- Mills DS, Dube MB, Zulch H. Stress and Pheromonatherapy in Small Animal Clinical Behaviour. Wiley-Blackwell; 2013.
- Mills D. The encyclopedia of applied animal behaviour and welfare. Wallingford: CAB International; 2010.
- Mills DM, Landsberg GM. editors. Special issue: veterinary behavioral medicine. Selected papers from the 5th International IVBM. Appl Anim Behav Sci 2007;105:4.
- Mills DS, Heath SE, Harrington LJ. Proceedings of the first international conference on veterinary behavioral medicine. Universities Federation for Animal Welfare, Herts, UK. 1997.
- Mills D, Levine E, Landsberg G, et al. editor. Current issues and research in veterinary behavioral medicine. West Lafayette, Indiana: Purdue University Press; 2005.
- Overall, K. Clinical behavioral medicine for small animals. St. Louis: Mosby; 1997.
- Overall K, Mills DS, Heath SE, et al. editors. Proceedings of the third international congress on veterinary behavioral medicine. Universities Federation for Animal Welfare, Herts, UK. 2001.
- Plumb DC. Plumb's veterinary drug handbook. 7th ed. Ames, Iowa: Wiley-Blackwell; 2011.
- Reid PJ. Excel-erated learning. Oakland, CA: James and Kenneth Publishers; 1996.
- Schwartz S. Psychoactive herbs in veterinary behavior medicine. Ames, Iowa: Blackwell Publishing; 2005.
- Seksel K, Perry G, Mills D, et al. editors. Proceedings of the 4th International Veterinary Behavior Meeting, Caloundra, Australia. Post Graduate Foundation in Veterinary Science, University of Sydney. 2003.
- Stewart G. Behavior Adjustment Training: BAT for Fear, Frustration and Aggression in Dogs. Dogwise Publishing; 2011.
- Voith VL, Borchelt PL, editor. Readings in companion animal behavior. Trenton, NJ: Veterinary Learning Systems; 1996.
- Yin S. Low stress handling, restraint and behavior modification of dogs and cats. Available online at: www.lowstresshandling.com; 2009.

References on dog and cat behavior

- Abrantes R. Evolution of canine social behavior. 2nd ed. Naperville, IL: Wakan Tanka Publishers; 2004.
- Aloff B. Canine body language; a photographic guide. Wenatchee, WA: Dogwise; 2005.
- Beaver BV. Feline behavior: a guide for veterinarians. 2nd ed. St. Louis, MO: Saunders, Elsevier; 2003.
- Beaver BV. Canine behavior: insights and answers. Philadelphia, PA: Saunders, Elsevier; 2009.

- Bradshaw JWS, Casey R, Brown S. The behaviour of the Domestic Cat. CAB International; 2012.
- Bradshaw J. Dog sense. Philadelphia, PA: Basic Books; 2011.
- Case LP. The cat: Its behaviour, nutrition and health. Ames, IA: Iowa State Press; 2003.
- Coppinger R, Coppinger L. Dogs – a startling new understanding of the origin, behavior and evolution. New York: Scribner; 2001.
- Dunbar I. Dog behavior. New York: Howell Book House; 1999.
- Fox M. Canine behavior. Springfield, IL: Charles Thomas; 1965.
- Fox MW. The dog: its domestication and behavior. New York: Garland STM Press; 1978.
- Haupt K. Domestic animal behavior for veterinarians and animal scientists. 5th ed. Ames, IA: John Wiley; 2011.
- Jensen P, editor. The behavioral biology of dogs. Wallingford, Oxon: CABI Publications; 2007.
- Mech LD, Boitani L. Wolves – behaviour, ecology and conservation., Chicago, IL: University of Chicago Press; 2006.
- Miklosi A. Dog behavior, evolution and cognition. New York: Oxford University Press; 2007.
- Rugaas T. On talking terms with dogs – calming signals, 2nd ed. Wenatchee, WA: Dogwise; 2006.
- Scott JP, Fuller JL. Dog behavior. The genetic basis. Chicago, IL: University of Chicago Press; 1965.
- Serpell J, Barrett P, editors. The domestic dog: its evolution, behavior and interactions with people. Cambridge: Cambridge University Press; 1996.
- Turner DC, Bateson P, editors. The domestic cat, the biology of its behavior. 2nd ed. Cambridge: Cambridge University Press; 2000.
- Communication – facial and body language resources**
- doggonessafe.com – Learn to Speak dog http://www.nap.edu/catalog.php?record_id=12910.
- Hetts S, Estep DQ, Grant. Canine Behavior: Observing and Interpreting Canine Body Postures DVD. animalbehaviorassociates.com.
- Kalnas S, The language of dogs DVD. Dogwise Publishing; 2006.
- Modern Dog Magazine – How to Read Body Language – <http://www.moderndogmagazine.com/articles/how-read-your-dogs-body-language/415>.
- Shepherd K. Ladder of Aggression. In: Horwitz DE, Mills D, editors. BSAVA Manual of Canine and Feline Behavioral Medicine. 2nd ed. Gloucester, UK: British Small Animal Veterinary Association; 2009.
- Yin S. Online movie clip and poster – http://drsophiayin.com/resources/video_full/dog-bite-prevention-psa-why-dogs-bite-and-what-to-avoid.
- Zoom Room Guide to Body Language https://www.youtube.com/watch?v=00_9JPltXHI.
- Useful behavioral references for pet owners and staff**
- Ackerman L. The contented canine: a guide to pet parenting for dog owners. Available online at: luniverse.com; 2001.
- Ackerman L, Landsberg G, Hunthausen W, editors. Cat behavior and training: veterinary advice for owners. Neptune, NJ: TFH Publications; 1996.
- Ackerman L, Landsberg G, Hunthausen W, editors. Dog behavior and training: veterinary advice for owners. Neptune, NJ: TFH Publications; 1996.
- American Association of Feline Practitioners. Feline behavior guidelines. Available online at: www.aafponline.org; 2004.
- Arden, A. Dog friendly dog training. 2nd ed. New York: Howell Book House; 2007.
- Bohnenkamp G. From the cat's point of view. Belmont, CA: Perfect Paws; 1991. [Other titles and resources from Gwen Bohnenkamp also recommended.].
- Burch M. AKC Star Puppy. A positive behavioral approach to puppy training. DogWise Publishing; 2012.
- Burch MR, Bailey JS. How dogs learn. New York: Howell Book House; 1999.
- Dodman N. The dog who loved too much. New York: Bantam; 1996.
- Dodman N. The cat who cried for help. New York: Bantam; 1997.
- Dodman N. Dogs behaving badly. An A-to-Z guide to understanding and curing behavioral problems in dogs. New York: Bantam; 1999.
- Donaldson J. The culture clash. Berkeley, CA: James and Kenneth Publishers; 2005.
- Donaldson J. Dogs are from Neptune. 2nd ed. Wenatchee, WA: Dogwise; 2009.
- Donaldson J. Train your dog like a pro. New York: Howell Books; 2010.
- Dunbar I. Before and after getting your puppy. Novato, CA: New World Library; 2004.
- Eaton B. Dominance in dogs, Fact or Fiction. Dogwise Publishing; 2012.
- Estep D, Hetts S. Help! I'm barking and I can't be quiet: a pet parenting guide and other handouts. Available online at: www.animalbehaviorassociates.com.
- Heath S. Why does my cat...? London: Souvenir Press; 1993.
- Horwitz D, Landsberg G. Behavior Advice for Clients (book and CD of client handouts). Lifelearn; 2012.
- Hunthausen W, Landsberg G. AAHA client behavior handouts. Denver, CO: AAHA press; 2012.
- Kirkham L. Tell your dog you're pregnant. An essential guide for dog owners who are expecting a baby. Little Creatures Publishing; 2012.
- McConnell PB, Moore AM. Family friendly dog training, Dog's Best Friend Limited, Available online at: www.dogsbestfriendtraining.com; 2006. [Other titles by Patricia McConnell also recommended.].
- Miller P. Power of positive dog training. New York: Howell Book House; 2001.
- Miller P. Positive perspectives. Love your dog, train your dog, Wenatchee, Washington: Dogwise Publishing; 2004.
- Moore A. The dog behavior answer book. North Adams, MA: Storey Publishing; 2006.
- Parsons E. Click to calm. Healing the aggressive dog. Karen Pryor's Clicker Training. Waltham, MA: Sunshine Books; 2004.
- Pryor K. Clicker training for cats. Surrey, UK: Ringpress Books; 2002.
- Pryor K. Clicker training for dogs. Surrey, UK: Ringpress Books; 2002.
- Pryor K. Don't shoot the dog; the new art of teaching and dog training. 3rd ed. Gloucestershire, UK: Ringpress Books; 2002.
- Pryor K. Reaching the animal mind – clicker training and what it teaches us about all animals. New York: Scribner; 2009.
- Reid P. Excel-erated learning. Berkeley, CA: James and Kenneth; 1996.
- Rogerson J. Dog Vinci code – unlock the secrets to training your dog. London: John Blake; 2010.
- Rutherford C, Neil D. How to raise a puppy you can live with. 4th ed. Crawford, CO: Alpine Publications; 2005.
- Ryan T. The toolbox for building a great family dog. Wenatchee, WA: Dogwise; 2010.
- Ryan T, Mortensen K. Outwitting dogs. Guilford, CT: Lyons Press; 2004.
- Schwartz Dr S. Cookie's guide to living happily with your cat. New York: St. Martins Griffin; 2002.
- Seksel K. Training your cat. Australia: Hyland House, Brunswick, Victoria; 2001.
- Thornton KC. Simple solutions: leash training. Irvine, CA: Bow Tie Press; [Also see other books by Kim Campbell Thornton in the Simple Solutions Series, including *Aggression, Barking, Chewing, Clicker Training, Digging, Housetraining, and Socialization*. Available online at: www.bowtiepress.com.] 2006.
- Yin S. Perfect Puppy in 7 Days. Cattledog Publishing; 2011.
- Yin S. How to behave so your dog behaves. 2nd ed. Neptune, NJ: TFH Publications; 2010.
- Zulch A, Mills D. Life Skills for Puppies. Hubble and Hattie Publishing; 2012.

Other resources and websites (may include commercial content)

American Animal Hospital Association senior care guidelines. Available online at: http://www.aahanet.org/About_aaha/About_Guidelines_senior.html.

American Association of Feline Practitioners and International Society of Feline Medicine. Feline-friendly handling guidelines. Available online at: <http://www.isfm.net/toolbox/index.html>.

American Association of Feline Practitioners senior care guidelines. Available online at: <http://www.catvets.com/professionals/guidelines/publications/?Id=398>.

American Humane Association. Pet meets baby. Available online at: <http://www.americanhumane.org/assets/pdfs/interaction/pet-meets-babypdf-updated.pdf>.

Bailey B. Operant conditioning and animal training DVDs. Available online at: www.dogwise.com.

Canine cognitive dysfunction – www.cdsindogs.com.

Child safety: www.thebluedog.org.

Clicker puppy DVD. Doggone crazy, Available online at: doggoneseafe.com; 2005.

Clicker training DVDs and clicker resources by Karen Pryor: www.clickertraining.com.

Dog books and resources: www.dogwise.com.

Doggone safe (safety with children and clicker training resources): www.doggoneseafe.com.

Donaldson J, Dunbar I. Fighting dominance in a dog whispering world (DVD). Available online at: [Dogwise.com](http://www.dogwise.com); 2007.

Dunbar I. Sirius dog training (DVD). Berkeley, CA: James and Kenneth Publishers; 2006.

Hettis S, Estep DQ, Grant D. Canine behavior: observing and interpreting canine body postures (DVD or VHS). Available online at: www.animalbehaviorassociates.com.

Hunthausen W, Manelli M. Dogs, cats and kids: learning to be safe with animals: available online at: <http://www.dogscatskids.com/>. [Topics in this DVD for children include understanding cat and dog behavior, handling family and friend's pets, and avoiding bites by straying animals.]

Landsberg G, Hunthausen W. American Animal Hospital Association client behavior pamphlets. Available online at: www.aahanet.org.

Landsberg GM, Horwitz DF. Behavior Advice for Clients, Client handout book and CD, lifelearn.com. Handouts also available by subscription on line at www.lifelearn-cliented.com.

PetCare Television. Welcome home your new friend. Available online at: www.petcaretv.com.

Petfinder (pet adoption and training videos): <http://www.petfinder.com/index.html>.

Pet safety: www.deltasocietyaustralia.com.au.

Pet safety: www.growingupwithpets.ca, www.growingupwithpets.com.

Pet safety DVD – [bowwowow.com](http://www.bowwowow.com).

Shyrock, Jennifer. DVD Dogs and Storks A program for new and expecting families with dogs. <http://familypaws.com>.

Sophia Yin – www.drSophiaYin.com.

Pet loss

Association for Pet Loss and Bereavement: www.aplb.org.

Pet loss support hotline: www.avma.org/careforanimals/animatedjourneys/goodbyefriend/plhotlines.asp.

Pet loss support: Ontario Veterinary College: www.ovc.uoguelph.ca/petloss/.

Pet loss support: Purdue: <http://www.vet.purdue.edu/chab/loss.htm>.

Pet loss support: University of Florida: http://neuro.vetmed.ufl.edu/alt_med/petgrief/petloss.htm.

Pet loss support: Washington State University: <http://www.vetmed.wsu.edu/PLHL/home/index.asp>.

For breed and pet selection references and resources, see Appendix C, form C.1, and client form #13, printable version available online

Useful websites with behavioral information

Academy of Veterinary Behavioral Technicians. www.avbt.net.

American Animal Hospital Association. www.healthypet.com.

American Association of Feline Practitioners. www.catvets.com.

American Association of Human Animal Bond Veterinarians. <http://aahabv.org/>.

American College of Veterinary Behaviorists. www.dacvb.org.

American Humane Society. www.americanhumane.org.

American Psychological Association. www.apa.org.

American Veterinary Medical Association. www.avma.org.

American Veterinary Society of Animal Behavior. www.avsabonline.org.

Animal Behavior Resources Institute. www.abrionline.org.

Animal Behavior Society. <http://animalbehaviorsociety.org/>.

Anthrozoology Institute. <http://seis.bris.ac.uk/~lvjwsb/>.

Applied Ethology Home Page. www.usask.ca/wcvm/herdmed/applied-ethology/.

Association for the Study of Animal Behaviour. www.asab.org.

Association of Pet Behaviour Counsellors. www.apbc.org.uk.

Association of Pet Dog Trainers. www.apdt.com.

Australian Association of Pet Dog Trainers. www.aapdt.org.

Cambridge Center for Behavioral Studies. www.behavior.org.

Canadian Association of Pet Dog Trainers. www.cappdt.ca.

Catalyst Council. www.catalystcouncil.org.

CENSHARE – Center to Study Human Animal Relationships and Environment (University of Minnesota). www.censhare.umn.edu.

Center for the Integrative Study of Animal Behavior. www.indiana.edu/~animal/index.html.

Certification Council for Professional Dog Trainers. www.ccpdt.org.

Certified Applied Animal Behaviorist. www.CertifiedAnimalBehaviorist.com.

Clicker Training USA. www.clickertrainusa.com.

Companion Animal Behaviour Therapy Study Group. www.cabtsg.org.

Cornell Feline Health Center. www.vet.cornell.edu/FHC/.

Cornell University Behavior Service. www.vet.cornell.edu/abc.

Delta Society Australia. www.deltasocietyaustralia.com.au.

Denver Dumb Friends League. www.ddfl.org.

Dog Welfare Campaign. www.dogwelfarecampaign.org.

European College of Animal Welfare and Behavioural Medicine www.ecawbm.org.

European Society of Veterinary Clinical Ethology. www.esvce.org.

Feline Advisory Bureau. www.fabcats.org.

Hunthausen WH, Animal Behavior Consultations. www.westwoodanimalhospital.com.

International Association of Animal Behavior Consultants. www.iaabc.org.

International Positive Dog Training Association: www.ipdta.org.

International Society of Feline Medicine. <http://www.isfm.net/>.

International Society for Adaptive Behavior: <http://www.isab.org.uk/ISAB/>.

International Society for Anthrozoology. <http://www.isaz.net/>.

International Society for Applied Ethology. <http://www.applied-ethology.org>.

Landsberg GM. www.northtorontovets.com.

Morris Animal Foundation. www.morrisanimalfoundation.org.

National Association of Dog Obedience Instructors. www.nadoi.org.

Net Vet Veterinary Resources. <http://netvet.wustl.edu/vettext.htm>.

Ohio State University Indoor Pet Initiative. www.indoorpet.osu.edu.
 Ontario Veterinary Medical Association. www.ovma.org.
 Pet Partners: www.deltasociety.org.
 Purdue Center for the Human Animal Bond. www.vet.purdue.edu/chab.
 Radosta L. www.flvetbehavior.com.
 Seksel K. www.sabs.com.au.
 Society for Behavioral Neuroendocrinology. www.sbn.org.
 Society of Veterinary Behavior Technicians www.svbt.org.
 The Electronic Zoo. <http://netvet.wustl.edu/ezootext.htm>.
 UC Davis Center for Companion Animal Health. <http://www.vetmed.ucdavis.edu/ccah/index.cfm>.
 University of California Center for Companion Animal Behavior: www.vetmed.ucdavis.edu/CCAB/main.htm.
 University of Georgia Applied Animal Behavior Service. <http://www.vet.uga.edu/var/services/behavior.php>.
 University of Minnesota School of Veterinary Medicine Behavior Service. <http://www.cvm.umn.edu/vmc/>.
 Veterinary Information Network. www.vin.com.
 Veterinary Partner. www.veterinarypartner.com.

Veterinary behavior drugs and supplements

Adaptil (CEVA) formerly DAP. www.adaptil.co.uk.
 Anipryl/selegiline (Pfizer). cdsindogs.com.
 Anxitane/l-theanine, Novifit/SAMe (Virbac). www.virbacvet.com.
 Clomicalm/clomipramine (Novartis USA). www.clomicalm.novartis.us.
 Feliway (CEVA). www.feliway.com.us, www.feliway.co.uk.
 Hormonease (VPL). www.vpl.com.
 Reconcile/fluoxetine (Elanco USA). www.reconcile.com.
 Selgian/selegiline (CEVA UK). <http://www.ceva.co.uk/en/Products/Products-list/Selgian>.
 Senilife. http://www.innovet.it/en/?pid=2&prd_az=sr&prd_v=10.
 Vivitonin/propentofylline (MSD UK). http://www.msd-animal-health.co.uk/products_public/vivitonin/010_overview.aspx.
 Zylkene/alphacasozepine (UK). www.zylkene.co.uk.

Product manufacturer information

Direct interactive devices

Barker Breaker, Mini Barker Breaker (sonic): www.amtekpet.com.
 Clix – dog stop alarm: companyofanimals.co.uk, www.companyofanimals.us.
 Direct Stop repellent (citronella spray): Premier Pet Products: www.premierpet.com*, petsafe.net.
 Dog Off – ultrasonic and sonic deterrent: www.koolatron.com.
 Halt (capsaicin spray): www.halt.com.
 Pet Agree/Dazer II (ultrasonic), KII Enterprises: www.kiienterprises.com.
 Pet Corrector – air spray: companyofanimals.co.uk.
 PetZoom – ultrasonic pet trainer: <https://www.petzoompettrainer.com/>.
 Ultrasonic remote trainer: www.petsafe.net.

Monitoring devices

Panasonic pet cam: <http://www.seemypetcam.com/cameras/>.
 Pet monitor: <http://www.eyespyfx.com/mywebcam.html>.
 Tattle Tale (vibration motion sensor): KII Enterprises: www.kiienterprises.com.

Remote devices

Deaf dog remote training devices: <http://www.deafdogs.org/resources/vibramakers.php>.
 Innotek spray commander: citronella: innotek.net.
 MasterPlus Pro: remote scentless spray and remote positive tone: companyofanimals.co.uk.
 Pet Safe remote spray trainer (citronella or unscented): petsafe.net.
 Remote dog trainer: vibration and sound collar: companyofanimals.co.uk.
 Spray Commander (remote scentless spray collar): Premier Pet Products: www.premierpet.com*, petsafe.net.
 Ultrasonic remote trainer: petsafe.net.

Booby traps (environmental punishment devices)

Boundary dog repellent: <http://www.odordestroyer.com/product/BDRY22DOG.html>.
 Cat stop: ultrasonic outdoor deterrent: www.contech-inc.com.
 Pawz Away deluxe spray deterrent (unscented): petsafe.net.
 Repel II dog repellent granules – <http://www.odordestroyer.com/product/BDRY22DOG.html>.
 Ropel animal repellent: multiple distributors.
 Scarecrow: motion-activated sprinkler: www.contech-inc.com.
 Scraminal – Critter Gitter: audible motion-activated alarm: amtekpet.com.
 Ssscat motion-activated spray: innotek.net.
 Stay away motion detector spray: contech-inc.com.
 Sticky Paws: www.stickypaws.com.

Electronic pet-activated doors

Electronic smart key (collar)-activated doors: www.petsafe.net.
 Microchip-activated cat doors: sureflap.ca, www.sureflap.co.uk, petporteusa.com, www.petdoors.com.

Self-cleaning litterbox

www.littermaid.com, catgenie.com, scoopfree.com, petsafe.net.

Automatic feeding/watering devices

Automated feeding dish: koolatron.com.
 Automatic/timed feeding dishes: www.smarthome.com.
 Drink better bowl (slows drinking), Eat Better bowl (slows eating): www.contech-inc.com.
 Perfect pet feeder: <http://www.perfectpetfeeder.com>.
 Programmable feeder: petmate.com.
 Two- and five-meal automated feeders: petsafe.net.
 Water dog – outdoor motion-activated pet water “fountain”: www.contech-inc.com.

Bark-activated devices

Aboistop – bark-activated scentless collar: companyofanimals.co.uk.
 Bark Free and Super Bark Free audible and ultrasonic bark-activated trainer: www.koolatron.com.
 Gentle Spray bark-activated collar (citronella or scentless): premierpet.com*, petsafe.net.
 Innotek lemon or citronella spray bark collar: innotek.net.
 No bark collar – vibration and noise: companyofanimals.co.uk.
 Outdoor bark control: ultrasonic: petsafe.net.
 PetSafe spray bark collar – unscented or citronella: petsafe.net.
 Super Barker Breaker, SureStop Barker Breaker, Good Neighbor Barker Breaker (audible bark-activated deterrents): www.amtekpet.com.
 Ultrasonic indoor bark control: petsafe.net.

Head halters

Canny Collar – The Canny Company: www.cannycollarco.com.
 Comfort trainer head halter: www.petexpertise.com.
 Control ease head halter: coastalpet.com.

*At the time of writing, Premier Pet Products, a division of PetSafe (Radio Systems Corporation), is scheduled to be rebranded under the PetSafe product line.

Gentle Leader, USA: www.gentleleader.com; Canada: www.gentleleadercanada.com.
 Halti: www.companyofanimals.co.uk; www.companyofanimals.us.
 NewTriX easy way collar: www.newtrix.ca.
 Snoot Loop: <http://snootloop.com>.
 Tender lead head halter: <http://bebopdogcollarsandleashes.com/head-halter/>.

No-pull body harness

Chest attachment
 Freedom no-pull harness: wiggleswagsandwhiskers.com.
 Gentle Leader Easy Walk Harness: www.gentleleader.com.
 Halti Harness: www.companyofanimals.co.uk; www.companyofanimals.us.
 Sense-ible and sense-ation body harness: <http://www.softtouchconcepts.com/>.

Rear attachment
 Holt – Coastal Pet Products: www.coastalpet.com.
 Sporn training halter – Sporn: www.sporn.com.

Sound desensitization

Helping fido welcome your baby: helpingfido.com.
 Master's Voice: www.mastersvoice-dog.com.
 Multiple sounds for desensitization or habituation: scarednomore.com.
 Multiple sounds for habituation or desensitization: www.companyofanimals.co.uk.
 PABA – multiple sounds for desensitization on CD: www.gentleleadercanada.com.
 Sound CDs for dogs – thunderstorms, fireworks, new puppies, agility, obedience: www.calmaudio.com.
 Sound sociable – socialization: www.soundtherapy4pets.com.
 Sound soothing – babies: www.soundtherapy4pets.com.
 Sound speedy – vehicles/traffic: www.soundtherapy4pets.com.
 Sounds Good CD – babies/thunder: dogwise.com.
 Sounds Scary CDs – thunder and fireworks: www.soundtherapy4pets.com.
 Thunder/noise CD: helpingfido.com.
 Thunder: suburban thunder: <http://www.f7sound.com/dog.htm>
 Also numerous sound CDs, including thunderstorms, are available at nature shops and web and sound files are available for download on the web.

Products for reducing anxiety/muting sounds stimuli

Anxiety wrap: <http://www.anxietywrap.com>.
 Calming cap: www.thundershirt.com.
 Doggles: <http://doggles.com/products.html>.
 Music for calming dogs – multiple products are available on the web
 Mutt Muffs: www.safeandsoundpets.com.

Storm defender cape: www.stormdefender.com.
 Thunderband: <http://www.jfinnovations.net/products.html>.
 Thunderhut: www.thunder-hut.com/.
 Thundershirt: www.thundershirt.com.

Odor eliminators

Anti-Icky Poo, Blacklight urine detector: antiickypoo.com.
 KOE/AOE/Cat Odor Off /Dog Odor Off (odor neutralizers): www.thornell.com.
 Urine-Erase: www.reidell.com.
 Urine-Off: www.urineoff.com.

Dog and cat muzzles

Air muzzle: www.softpaws.com.
 Baskerville and Ultrabaskerville muzzles: companyofanimals.us, companyofanimals.co.uk, kvp.com.
 Dog and cat muzzles: campbellpet.com, vetsol.com.
 Jafco plastic muzzles: petexpertise.com, vetsol.com.
 Quick nylon muzzles: fourflags.com.
 Soft dog muzzle (smuzzle): dogmuzzle.com.

Miscellaneous products

Assess-a-hand: www.greatdogproductions.com.
 Atomic treat ball, IQ treat ball, Buster Food Cube: www.ourpets.com/products_smartertoys.html.
 Aussie Dog Products: www.aussiedog.com.au.
 Buster cube, Buster DogMaze: www.bustercube.com.
 Busy Buddy, Pogo Plush, Linkables, Fun Kitty: www.premierpet.com*, www.petsafe.net.
 Cat enclosures: www.purrfectfence.com, habitathaven.com, kittywalksystems.com.
 Catit Senses Treat Maze, Deli Dome Cat toy feeder, Tire trax dog chew toy, Mojo treat ball, Dog e-logic interactive toy, Disco tug flying disk: multiple distributors.
 Chewber: www.chewber.com.
 Go! Cat Go! – Play-N-Treat, Push-N-Roll cat toys: http://www.ourpets.com/products_gocatgo.html.
 Kong dog and cat toys: www.kongcompany.com.
 Manners Minder: www.premierpet.com, www.drsophiayin.com, petexpertise.com.
 Nina Ottoson interactive toys: www.companyofanimals.us, www.companyofanimals.co.uk.
 Nylabone toys: www.nylabone.com.
 Pavlov's cat – cat scratch feeder: <http://www.mktmkt.com/pavlovscat.html>.
 Pipolino cat feeding toy: pipolino.ca, pipolino.us.
 Planet Dog toys: www.planetdog.com.
 Slim cat feeding toy: petsafe.net.
 Smart Cat toys: esmartcat.com.
 Soft paws nail coverings: www.softpaws.com.
 Tricky treat ball – Fitness first treat ball – portion pacer (slows eating): omegapaw.com.

*At the time of writing, Premier Pet Products, a division of PetSafe (Radio Systems Corporation), is scheduled to be rebranded under the PetSafe product line.

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Appendix B Behavior resources

Available for printing from website

Note that some of the authors listed below are quite prolific; therefore only their most recent or popular titles have been included. However, in most cases, the recommendation of an author is an indication that additional works by the same author would also be recommended. On the other hand, since our knowledge of the field is quickly evolving, choosing an author's newest publications will provide the most updated material. This list is also limited to those texts and products with which the authors are familiar. Additional reading material is also listed at the end of each chapter in the text.

Canine and feline behavioral references for veterinarians and behavior consultants

- Ackerman L. Five-minute veterinary practice management consult. Ames, Iowa: Blackwell Publishing; 2007.
- Askew HR. Treatment of behavior problems in dogs and cats. A guide for the small animal veterinarians. 2nd ed. Oxford, UK: Blackwell Publishing; 2003.
- Beaver BV. The veterinarian's encyclopedia of animal behavior. Ames, IA: Iowa State University Press; 1994.
- Bowen J, Heath S. Behavior problems in small animals – practical advice for the veterinary team. St. Louis, MO: Elsevier; 2005.
- Crowell-Davis SL, Murray T. Veterinary psychopharmacology. Hoboken, NJ: Blackwell Publishing; 2006.
- Dodman NH, Shuster L. Psychopharmacology of animal behavior disorders. Malden, MA: Blackwell Science; 1997.
- Hart BL, Hart LA, Bain M. Canine and feline behavior therapy, 2nd ed. Ames, IA: Blackwell Publishing; 2006.
- Head L, Landsberg GM. Cognitive dysfunction in aged dogs. In: Ettinger SJ, Feldman EC, editors. Textbook of veterinary internal medicine. 7th ed. St. Louis, MO: Saunders, Elsevier; 2010. p. 238–9.
- Heath S, editor. Proceedings of the 7th International Meeting of Veterinary Behaviour Medicine. ESVCe Belgium, 2009, 142–5.
- Hettis SA. Pet behavior protocols. What to say, what to do, when to refer. Denver, CO: AAHA Press; 1999.
- Horwitz DF, Mills D. BSAVA Manual of Canine and Feline Behavioral Medicine. 2nd ed. Gloucester, UK: British Small Animal Veterinary Association; 2009.
- Horwitz D, Neilson J. Blackwell's five minute veterinary consult clinical companion, canine and feline behavior. Ames, IA: Blackwell Publishing; 2007.
- Houpt K, Virga V. Update on clinical veterinary behavior. Vet Clin North Am Small Anim Pract 2003;33:185–453.
- Journal of Applied Animal Behavior Science.*
- Journal of Veterinary Behavior; Clinical Applications and Research.*
- Landsberg GM, Denenberg S. Behavior. The Merck veterinary manual. 10th ed. Whitehouse Station, NJ: Merck & Co, Inc; 2010. p. 1419–57.
- Landsberg GM, Horwitz D. Behavior Advice for Clients. (Book and accompanying CD). Guelph: Lifelearn; 2012.
- Landsberg GM, Horwitz D. Practical applications and new perspectives in veterinary behavior. Vet Clin North Am Small Anim Pract 2008;38:937–1171.
- Landsberg GM, Mills D, editor. Proceedings of the 6th International Veterinary Behavior Meeting and ECVBM-CA. Fondazione Iniziative Zooprofilattiche E Zootniche, Brescia, Italy, 2007.
- Landsberg GM, Nichol J, Araujo JA. Cognitive dysfunction syndrome: a disease of canine and feline brain aging. Vet Clin Small Anim 2012;42:749–68.
- Landsberg GM, DePorter T, Araujo JA. Management of anxiety, sleeplessness and cognitive dysfunction. Vet Clin North Am 2011;41:565–90.
- Landsberg G, Hunthausen W, Ackerman L. Handbook of behavior problems of the dog and cat. 3rd ed. Edinburgh, UK: Saunders; 2012.
- Lindsay S. Handbook of applied dog behavior and training, vols. 1–3. Wiley-Blackwell; 2005.
- McGreevy PD, Boaks RA. Carrots and sticks; principles of animal behavior training. Cambridge: Cambridge University Press; 2007.
- Messner J. The Kinderpuppy course – a curriculum for instructors. Ottawa, Ontario: PavSki Canine Educational Resources; 2007.
- Mills DS, Dube MB, Zulch H. Stress and Pheromonatherapy in Small Animal Clinical Behaviour. Wiley-Blackwell; 2013.
- Mills D. The encyclopedia of applied animal behaviour and welfare. Wallingford: CAB International; 2010.
- Mills DM, Landsberg GM. editors. Special issue: veterinary behavioral medicine. Selected papers from the 5th International IVBM. Appl Anim Behav Sci 2007;105:4.
- Mills DS, Heath SE, Harrington LJ. Proceedings of the first international conference on veterinary behavioral medicine. Universities Federation for Animal Welfare, Herts, UK. 1997.
- Mills D, Levine E, Landsberg G, et al. editor. Current issues and research in veterinary behavioral medicine. West Lafayette, Indiana: Purdue University Press; 2005.
- Overall, K. Clinical behavioral medicine for small animals. St. Louis: Mosby; 1997.
- Overall K, Mills DS, Heath SE, et al. editors. Proceedings of the third international congress on veterinary behavioral medicine. Universities Federation for Animal Welfare, Herts, UK. 2001.
- Plumb DC. Plumb's veterinary drug handbook. 7th ed. Ames, Iowa: Wiley-Blackwell; 2011.
- Reid PJ. Excel-erated learning. Oakland, CA: James and Kenneth Publishers; 1996.
- Schwartz S. Psychoactive herbs in veterinary behavior medicine. Ames, Iowa: Blackwell Publishing; 2005.
- Seksel K, Perry G, Mills D, et al. editors. Proceedings of the 4th International Veterinary Behavior Meeting, Caloundra, Australia. Post Graduate Foundation in Veterinary Science, University of Sydney. 2003.
- Stewart G. Behavior Adjustment Training: BAT for Fear, Frustration and Aggression in Dogs. Dogwise Publishing; 2011.
- Voith VL, Borchelt PL, editor. Readings in companion animal behavior. Trenton, NJ: Veterinary Learning Systems; 1996.
- Yin S. Low stress handling, restraint and behavior modification of dogs and cats. Available online at: www.lowstresshandling.com; 2009.

References on dog and cat behavior

- Abrantes R. Evolution of canine social behavior. 2nd ed. Naperville, IL: Wakan Tanka Publishers; 2004.
- Aloff B. Canine body language; a photographic guide. Wenatchee, WA: Dogwise; 2005.
- Beaver BV. Feline behavior: a guide for veterinarians. 2nd ed. St. Louis, MO: Saunders, Elsevier; 2003.
- Beaver BV. Canine behavior: insights and answers. Philadelphia, PA: Saunders, Elsevier; 2009.

- Bradshaw JWS, Casey R, Brown S. The behaviour of the Domestic Cat. CAB International; 2012.
- Bradshaw J. Dog sense. Philadelphia, PA: Basic Books; 2011.
- Case LP. The cat: Its behaviour, nutrition and health. Ames, IA: Iowa State Press; 2003.
- Coppinger R, Coppinger L. Dogs – a startling new understanding of the origin, behavior and evolution. New York: Scribner; 2001.
- Dunbar I. Dog behavior. New York: Howell Book House; 1999.
- Fox M. Canine behavior. Springfield, IL: Charles Thomas; 1965.
- Fox MW. The dog: its domestication and behavior. New York: Garland STM Press; 1978.
- Haupt K. Domestic animal behavior for veterinarians and animal scientists. 5th ed. Ames, IA: John Wiley; 2011.
- Jensen P, editor. The behavioral biology of dogs. Wallingford, Oxon: CABI Publications; 2007.
- Mech LD, Boitani L. Wolves – behaviour, ecology and conservation., Chicago, IL: University of Chicago Press; 2006.
- Miklosi A. Dog behavior, evolution and cognition. New York: Oxford University Press; 2007.
- Rugaas T. On talking terms with dogs – calming signals, 2nd ed. Wenatchee, WA: Dogwise; 2006.
- Scott JP, Fuller JL. Dog behavior. The genetic basis. Chicago, IL: University of Chicago Press; 1965.
- Serpell J, Barrett P, editors. The domestic dog: its evolution, behavior and interactions with people. Cambridge: Cambridge University Press; 1996.
- Turner DC, Bateson P, editors. The domestic cat, the biology of its behavior. 2nd ed. Cambridge: Cambridge University Press; 2000.
- Communication – facial and body language resources**
- doggonessafe.com – Learn to Speak dog http://www.nap.edu/catalog.php?record_id=12910.
- Hetts S, Estep DQ, Grant. Canine Behavior: Observing and Interpreting Canine Body Postures DVD. animalbehaviorassociates.com.
- Kalnas S, The language of dogs DVD. Dogwise Publishing; 2006.
- Modern Dog Magazine – How to Read Body Language – <http://www.moderndogmagazine.com/articles/how-read-your-dogs-body-language/415>.
- Shepherd K. Ladder of Aggression. In: Horwitz DE, Mills D, editors. BSAVA Manual of Canine and Feline Behavioral Medicine. 2nd ed. Gloucester, UK: British Small Animal Veterinary Association; 2009.
- Yin S. Online movie clip and poster – http://drsophiayin.com/resources/video_full/dog-bite-prevention-psa-why-dogs-bite-and-what-to-avoid.
- Zoom Room Guide to Body Language https://www.youtube.com/watch?v=00_9JPltXHI.
- Useful behavioral references for pet owners and staff**
- Ackerman L. The contented canine: a guide to pet parenting for dog owners. Available online at: luniverse.com; 2001.
- Ackerman L, Landsberg G, Hunthausen W, editors. Cat behavior and training: veterinary advice for owners. Neptune, NJ: TFH Publications; 1996.
- Ackerman L, Landsberg G, Hunthausen W, editors. Dog behavior and training: veterinary advice for owners. Neptune, NJ: TFH Publications; 1996.
- American Association of Feline Practitioners. Feline behavior guidelines. Available online at: www.aafponline.org; 2004.
- Arden, A. Dog friendly dog training. 2nd ed. New York: Howell Book House; 2007.
- Bohnenkamp G. From the cat's point of view. Belmont, CA: Perfect Paws; 1991. [Other titles and resources from Gwen Bohnenkamp also recommended.].
- Burch M. AKC Star Puppy. A positive behavioral approach to puppy training. DogWise Publishing; 2012.
- Burch MR, Bailey JS. How dogs learn. New York: Howell Book House; 1999.
- Dodman N. The dog who loved too much. New York: Bantam; 1996.
- Dodman N. The cat who cried for help. New York: Bantam; 1997.
- Dodman N. Dogs behaving badly. An A-to-Z guide to understanding and curing behavioral problems in dogs. New York: Bantam; 1999.
- Donaldson J. The culture clash. Berkeley, CA: James and Kenneth Publishers; 2005.
- Donaldson J. Dogs are from Neptune. 2nd ed. Wenatchee, WA: Dogwise; 2009.
- Donaldson J. Train your dog like a pro. New York: Howell Books; 2010.
- Dunbar I. Before and after getting your puppy. Novato, CA: New World Library; 2004.
- Eaton B. Dominance in dogs, Fact or Fiction. Dogwise Publishing; 2012.
- Estep D, Hetts S. Help! I'm barking and I can't be quiet: a pet parenting guide and other handouts. Available online at: www.animalbehaviorassociates.com.
- Heath S. Why does my cat...? London: Souvenir Press; 1993.
- Horwitz D, Landsberg G. Behavior Advice for Clients (book and CD of client handouts). Lifelearn; 2012.
- Hunthausen W, Landsberg G. AAHA client behavior handouts. Denver, CO: AAHA press; 2012.
- Kirkham L. Tell your dog you're pregnant. An essential guide for dog owners who are expecting a baby. Little Creatures Publishing; 2012.
- McConnell PB, Moore AM. Family friendly dog training, Dog's Best Friend Limited, Available online at: www.dogsbestfriendtraining.com; 2006. [Other titles by Patricia McConnell also recommended.].
- Miller P. Power of positive dog training. New York: Howell Book House; 2001.
- Miller P. Positive perspectives. Love your dog, train your dog, Wenatchee, Washington: Dogwise Publishing; 2004.
- Moore A. The dog behavior answer book. North Adams, MA: Storey Publishing; 2006.
- Parsons E. Click to calm. Healing the aggressive dog. Karen Pryor's Clicker Training. Waltham, MA: Sunshine Books; 2004.
- Pryor K. Clicker training for cats. Surrey, UK: Ringpress Books; 2002.
- Pryor K. Clicker training for dogs. Surrey, UK: Ringpress Books; 2002.
- Pryor K. Don't shoot the dog; the new art of teaching and dog training. 3rd ed. Gloucestershire, UK: Ringpress Books; 2002.
- Pryor K. Reaching the animal mind – clicker training and what it teaches us about all animals. New York: Scribner; 2009.
- Reid P. Excel-erated learning. Berkeley, CA: James and Kenneth; 1996.
- Rogerson J. Dog Vinci code – unlock the secrets to training your dog. London: John Blake; 2010.
- Rutherford C, Neil D. How to raise a puppy you can live with. 4th ed. Crawford, CO: Alpine Publications; 2005.
- Ryan T. The toolbox for building a great family dog. Wenatchee, WA: Dogwise; 2010.
- Ryan T, Mortensen K. Outwitting dogs. Guilford, CT: Lyons Press; 2004.
- Schwartz Dr S. Cookie's guide to living happily with your cat. New York: St. Martins Griffin; 2002.
- Seksel K. Training your cat. Australia: Hyland House, Brunswick, Victoria; 2001.
- Thornton KC. Simple solutions: leash training. Irvine, CA: Bow Tie Press; [Also see other books by Kim Campbell Thornton in the Simple Solutions Series, including *Aggression, Barking, Chewing, Clicker Training, Digging, Housetraining, and Socialization*. Available online at: www.bowtiepress.com.] 2006.
- Yin S. Perfect Puppy in 7 Days. Cattledog Publishing; 2011.
- Yin S. How to behave so your dog behaves. 2nd ed. Neptune, NJ: TFH Publications; 2010.
- Zulch A, Mills D. Life Skills for Puppies. Hubble and Hattie Publishing; 2012.

Other resources and websites (may include commercial content)

American Animal Hospital Association senior care guidelines. Available online at: http://www.aahanet.org/About_aaha/About_Guidelines_senior.html.

American Association of Feline Practitioners and International Society of Feline Medicine. Feline-friendly handling guidelines. Available online at: <http://www.isfm.net/toolbox/index.html>.

American Association of Feline Practitioners senior care guidelines. Available online at: <http://www.catvets.com/professionals/guidelines/publications/?Id=398>.

American Humane Association. Pet meets baby. Available online at: <http://www.americanhumane.org/assets/pdfs/interaction/pet-meets-babypdf-updated.pdf>.

Bailey B. Operant conditioning and animal training DVDs. Available online at: www.dogwise.com.

Canine cognitive dysfunction – www.cdsindogs.com.

Child safety: www.thebluedog.org.

Clicker puppy DVD. Doggone crazy, Available online at: doggoneseafe.com; 2005.

Clicker training DVDs and clicker resources by Karen Pryor: www.clickertraining.com.

Dog books and resources: www.dogwise.com.

Doggone safe (safety with children and clicker training resources): www.doggoneseafe.com.

Donaldson J, Dunbar I. Fighting dominance in a dog whispering world (DVD). Available online at: Dogwise.com; 2007.

Dunbar I. Sirius dog training (DVD). Berkeley, CA: James and Kenneth Publishers; 2006.

Hettis S, Estep DQ, Grant D. Canine behavior: observing and interpreting canine body postures (DVD or VHS). Available online at: www.animalbehaviorassociates.com.

Hunthausen W, Manelli M. Dogs, cats and kids: learning to be safe with animals: available online at: <http://www.dogscatskids.com/>. [Topics in this DVD for children include understanding cat and dog behavior, handling family and friend's pets, and avoiding bites by straying animals.]

Landsberg G, Hunthausen W. American Animal Hospital Association client behavior pamphlets. Available online at: www.aahanet.org.

Landsberg GM, Horwitz DF. Behavior Advice for Clients, Client handout book and CD, lifelearn.com. Handouts also available by subscription on line at www.lifelearn-cliented.com.

PetCare Television. Welcome home your new friend. Available online at: www.petcaretv.com.

Petfinder (pet adoption and training videos): <http://www.petfinder.com/index.html>.

Pet safety: www.deltasocietyaustralia.com.au.

Pet safety: www.growingupwithpets.ca, www.growingupwithpets.com.

Pet safety DVD – [bowwowow.com](http://www.bowwowow.com).

Shyrock, Jennifer. DVD Dogs and Storks A program for new and expecting families with dogs. <http://familypaws.com>.

Sophia Yin – www.drSophiaYin.com.

Pet loss

Association for Pet Loss and Bereavement: www.aplb.org.

Pet loss support hotline: www.avma.org/careforanimals/animatedjourneys/goodbyefriend/plhotlines.asp.

Pet loss support: Ontario Veterinary College: www.ovc.uoguelph.ca/petloss/.

Pet loss support: Purdue: <http://www.vet.purdue.edu/chab/loss.htm>.

Pet loss support: University of Florida: http://neuro.vetmed.ufl.edu/alt_med/petgrief/petloss.htm.

Pet loss support: Washington State University: <http://www.vetmed.wsu.edu/PLHL/home/index.asp>.

For breed and pet selection references and resources, see Appendix C, form C.1, and client form #13, printable version available online

Useful websites with behavioral information

Academy of Veterinary Behavioral Technicians. www.avbt.net.

American Animal Hospital Association. www.healthypet.com.

American Association of Feline Practitioners. www.catvets.com.

American Association of Human Animal Bond Veterinarians. <http://aahabv.org/>.

American College of Veterinary Behaviorists. www.dacvb.org.

American Humane Society. www.americanhumane.org.

American Psychological Association. www.apa.org.

American Veterinary Medical Association. www.avma.org.

American Veterinary Society of Animal Behavior. www.avsabonline.org.

Animal Behavior Resources Institute. www.abrionline.org.

Animal Behavior Society. <http://animalbehaviorsociety.org/>.

Anthrozoology Institute. <http://seis.bris.ac.uk/~lvjwsb/>.

Applied Ethology Home Page. www.usask.ca/wcvm/herdmed/applied-ethology/.

Association for the Study of Animal Behaviour. www.asab.org.

Association of Pet Behaviour Counsellors. www.apbc.org.uk.

Association of Pet Dog Trainers. www.apdt.com.

Australian Association of Pet Dog Trainers. www.aapdt.org.

Cambridge Center for Behavioral Studies. www.behavior.org.

Canadian Association of Pet Dog Trainers. www.cappdt.ca.

Catalyst Council. www.catalystcouncil.org.

CENSHARE – Center to Study Human Animal Relationships and Environment (University of Minnesota). www.censhare.umn.edu.

Center for the Integrative Study of Animal Behavior. www.indiana.edu/~animal/index.html.

Certification Council for Professional Dog Trainers. www.ccpdt.org.

Certified Applied Animal Behaviorist. www.CertifiedAnimalBehaviorist.com.

Clicker Training USA. www.clickertrainusa.com.

Companion Animal Behaviour Therapy Study Group. www.cabts.org.

Cornell Feline Health Center. www.vet.cornell.edu/FHC/.

Cornell University Behavior Service. www.vet.cornell.edu/abc.

Delta Society Australia. www.deltasocietyaustralia.com.au.

Denver Dumb Friends League. www.ddfl.org.

Dog Welfare Campaign. www.dogwelfarecampaign.org.

European College of Animal Welfare and Behavioural Medicine www.ecawbm.org.

European Society of Veterinary Clinical Ethology. www.esvce.org.

Feline Advisory Bureau. www.fabcats.org.

Hunthausen WH, Animal Behavior Consultations. www.westwoodanimalhospital.com.

International Association of Animal Behavior Consultants. www.iaabc.org.

International Positive Dog Training Association: www.ipdta.org.

International Society of Feline Medicine. <http://www.isfm.net/>.

International Society for Adaptive Behavior: <http://www.isab.org.uk/ISAB/>.

International Society for Anthrozoology. <http://www.isaz.net/>.

International Society for Applied Ethology. <http://www.applied-ethology.org>.

Landsberg GM. www.northtorontovets.com.

Morris Animal Foundation. www.morrisanimalfoundation.org.

National Association of Dog Obedience Instructors. www.nadoi.org.

Net Vet Veterinary Resources. <http://netvet.wustl.edu/vettext.htm>.

Ohio State University Indoor Pet Initiative. www.indoorpet.osu.edu.
 Ontario Veterinary Medical Association. www.ovma.org.
 Pet Partners: www.deltasociety.org.
 Purdue Center for the Human Animal Bond. www.vet.purdue.edu/chab.
 Radosta L. www.flvetbehavior.com.
 Seksel K. www.sabs.com.au.
 Society for Behavioral Neuroendocrinology. www.sbn.org.
 Society of Veterinary Behavior Technicians www.svbt.org.
 The Electronic Zoo. <http://netvet.wustl.edu/ezootext.htm>.
 UC Davis Center for Companion Animal Health. <http://www.vetmed.ucdavis.edu/ccah/index.cfm>.
 University of California Center for Companion Animal Behavior: www.vetmed.ucdavis.edu/CCAB/main.htm.
 University of Georgia Applied Animal Behavior Service. <http://www.vet.uga.edu/var/services/behavior.php>.
 University of Minnesota School of Veterinary Medicine Behavior Service. <http://www.cvm.umn.edu/vmc/>.
 Veterinary Information Network. www.vin.com.
 Veterinary Partner. www.veterinarypartner.com.

Veterinary behavior drugs and supplements

Adaptil (CEVA) formerly DAP. www.adaptil.co.uk.
 Anipryl/selegiline (Pfizer). cdsindogs.com.
 Anxitane/l-theanine, Novifit/SAMe (Virbac). www.virbacvet.com.
 Clomicalm/clomipramine (Novartis USA). www.clomicalm.novartis.us.
 Feliway (CEVA). www.feliway.com.us, www.feliway.co.uk.
 Hormonease (VPL). www.vpl.com.
 Reconcile/fluoxetine (Elanco USA). www.reconcile.com.
 Selgian/selegiline (CEVA UK). <http://www.ceva.co.uk/en/Products/Products-list/Selgian>.
 Senilife. http://www.innovet.it/en/?pid=2&prd_az=sr&prd_v=10.
 Vivitonin/propentofylline (MSD UK). http://www.msd-animal-health.co.uk/products_public/vivitonin/010_overview.aspx.
 Zylkene/alphacasozepine (UK). www.zylkene.co.uk.

Product manufacturer information

Direct interactive devices

Barker Breaker, Mini Barker Breaker (sonic): www.amtekpet.com.
 Clix – dog stop alarm: companyofanimals.co.uk, www.companyofanimals.us.
 Direct Stop repellent (citronella spray): Premier Pet Products: www.premierpet.com*, petsafe.net.
 Dog Off – ultrasonic and sonic deterrent: www.koolatron.com.
 Halt (capsaicin spray): www.halt.com.
 Pet Agree/Dazer II (ultrasonic), KII Enterprises: www.kiienterprises.com.
 Pet Corrector – air spray: companyofanimals.co.uk.
 PetZoom – ultrasonic pet trainer: <https://www.petzoompettrainer.com/>.
 Ultrasonic remote trainer: www.petsafe.net.

Monitoring devices

Panasonic pet cam: <http://www.seemypetcam.com/cameras/>.
 Pet monitor: <http://www.eyespyfx.com/mywebcam.html>.
 Tattle Tale (vibration motion sensor): KII Enterprises: www.kiienterprises.com.

Remote devices

Deaf dog remote training devices: <http://www.deafdogs.org/resources/vibramakers.php>.
 Innotek spray commander: citronella: innotek.net.
 MasterPlus Pro: remote scentless spray and remote positive tone: companyofanimals.co.uk.
 Pet Safe remote spray trainer (citronella or unscented): petsafe.net.
 Remote dog trainer: vibration and sound collar: companyofanimals.co.uk.
 Spray Commander (remote scentless spray collar): Premier Pet Products: www.premierpet.com*, petsafe.net.
 Ultrasonic remote trainer: petsafe.net.

Booby traps (environmental punishment devices)

Boundary dog repellent: <http://www.odordestroyer.com/product/BDRY22DOG.html>.
 Cat stop: ultrasonic outdoor deterrent: www.contech-inc.com.
 Pawz Away deluxe spray deterrent (unscented): petsafe.net.
 Repel II dog repellent granules – <http://www.odordestroyer.com/product/BDRY22DOG.html>.
 Ropel animal repellent: multiple distributors.
 Scarecrow: motion-activated sprinkler: www.contech-inc.com.
 Scraminal – Critter Gitter: audible motion-activated alarm: amtekpet.com.
 Ssscat motion-activated spray: innotek.net.
 Stay away motion detector spray: contech-inc.com.
 Sticky Paws: www.stickypaws.com.

Electronic pet-activated doors

Electronic smart key (collar)-activated doors: www.petsafe.net.
 Microchip-activated cat doors: sureflap.ca, www.sureflap.co.uk, petporteusa.com, www.petdoors.com.

Self-cleaning litterbox

www.littermaid.com, catgenie.com, scoopfree.com, petsafe.net.

Automatic feeding/watering devices

Automated feeding dish: koolatron.com.
 Automatic/timed feeding dishes: www.smarthome.com.
 Drink better bowl (slows drinking), Eat Better bowl (slows eating): www.contech-inc.com.
 Perfect pet feeder: <http://www.perfectpetfeeder.com>.
 Programmable feeder: petmate.com.
 Two- and five-meal automated feeders: petsafe.net.
 Water dog – outdoor motion-activated pet water “fountain”: www.contech-inc.com.

Bark-activated devices

Aboistop – bark-activated scentless collar: companyofanimals.co.uk.
 Bark Free and Super Bark Free audible and ultrasonic bark-activated trainer: www.koolatron.com.
 Gentle Spray bark-activated collar (citronella or scentless): premierpet.com*, petsafe.net.
 Innotek lemon or citronella spray bark collar: innotek.net.
 No bark collar – vibration and noise: companyofanimals.co.uk.
 Outdoor bark control: ultrasonic: petsafe.net.
 PetSafe spray bark collar – unscented or citronella: petsafe.net.
 Super Barker Breaker, SureStop Barker Breaker, Good Neighbor Barker Breaker (audible bark-activated deterrents): www.amtekpet.com.
 Ultrasonic indoor bark control: petsafe.net.

Head halters

Canny Collar – The Canny Company: www.cannycollarco.com.
 Comfort trainer head halter: www.petexpertise.com.
 Control ease head halter: coastalpet.com.

*At the time of writing, Premier Pet Products, a division of PetSafe (Radio Systems Corporation), is scheduled to be rebranded under the PetSafe product line.

Gentle Leader, USA: www.gentleleader.com; Canada: www.gentleleadercanada.com.
 Halti: www.companyofanimals.co.uk; www.companyofanimals.us.
 NewTriX easy way collar: www.newtrix.ca.
 Snoot Loop: <http://snootloop.com>.
 Tender lead head halter: <http://bebopdogcollarsandleashes.com/head-halter/>.

No-pull body harness

Chest attachment
 Freedom no-pull harness: wiggleswagsandwhiskers.com.
 Gentle Leader Easy Walk Harness: www.gentleleader.com.
 Halti Harness: www.companyofanimals.co.uk; www.companyofanimals.us.
 Sense-ible and sense-ation body harness: <http://www.softtouchconcepts.com/>.

Rear attachment
 Holt – Coastal Pet Products: www.coastalpet.com.
 Sporn training halter – Sporn: www.sporn.com.

Sound desensitization

Helping fido welcome your baby: helpingfido.com.
 Master's Voice: www.mastersvoice-dog.com.
 Multiple sounds for desensitization or habituation: scarednomore.com.
 Multiple sounds for habituation or desensitization: www.companyofanimals.co.uk.
 PABA – multiple sounds for desensitization on CD: www.gentleleadercanada.com.
 Sound CDs for dogs – thunderstorms, fireworks, new puppies, agility, obedience: www.calmaudio.com.
 Sound sociable – socialization: www.soundtherapy4pets.com.
 Sound soothing – babies: www.soundtherapy4pets.com.
 Sound speedy – vehicles/traffic: www.soundtherapy4pets.com.
 Sounds Good CD – babies/thunder: dogwise.com.
 Sounds Scary CDs – thunder and fireworks: www.soundtherapy4pets.com.
 Thunder/noise CD: helpingfido.com.
 Thunder: suburban thunder: <http://www.f7sound.com/dog.htm>
 Also numerous sound CDs, including thunderstorms, are available at nature shops and web and sound files are available for download on the web.

Products for reducing anxiety/muting sounds stimuli

Anxiety wrap: <http://www.anxietywrap.com>.
 Calming cap: www.thundershirt.com.
 Doggles: <http://doggles.com/products.html>.
 Music for calming dogs – multiple products are available on the web
 Mutt Muffs: www.safeandsoundpets.com.

Storm defender cape: www.stormdefender.com.
 Thunderband: <http://www.jfinnovations.net/products.html>.
 Thunderhut: www.thunder-hut.com/.
 Thundershirt: www.thundershirt.com.

Odor eliminators

Anti-Icky Poo, Blacklight urine detector: antiickypoo.com.
 KOE/AOE/Cat Odor Off /Dog Odor Off (odor neutralizers): www.thornell.com.
 Urine-Erase: www.reidell.com.
 Urine-Off: www.urineoff.com.

Dog and cat muzzles

Air muzzle: www.softpaws.com.
 Baskerville and Ultrabaskerville muzzles: companyofanimals.us, companyofanimals.co.uk, kvp.com.
 Dog and cat muzzles: campbellpet.com, vetsol.com.
 Jafco plastic muzzles: petexpertise.com, vetsol.com.
 Quick nylon muzzles: fourflags.com.
 Soft dog muzzle (smuzzle): dogmuzzle.com.

Miscellaneous products

Assess-a-hand: www.greatdogproductions.com.
 Atomic treat ball, IQ treat ball, Buster Food Cube: www.ourpets.com/products_smartertoys.html.
 Aussie Dog Products: www.aussiedog.com.au.
 Buster cube, Buster DogMaze: www.bustercube.com.
 Busy Buddy, Pogo Plush, Linkables, Fun Kitty: www.premierpet.com*, www.petsafe.net.
 Cat enclosures: www.purrfectfence.com, habitathaven.com, kittywalksystems.com.
 Catit Senses Treat Maze, Deli Dome Cat toy feeder, Tire trax dog chew toy, Mojo treat ball, Dog e-logic interactive toy, Disco tug flying disk: multiple distributors.
 Chewber: www.chewber.com.
 Go! Cat Go! – Play-N-Treat, Push-N-Roll cat toys: http://www.ourpets.com/products_gocatgo.html.
 Kong dog and cat toys: www.kongcompany.com.
 Manners Minder: www.premierpet.com, www.drsophiayin.com, petexpertise.com.
 Nina Ottoson interactive toys: www.companyofanimals.us, www.companyofanimals.co.uk.
 Nylabone toys: www.nylabone.com.
 Pavlov's cat – cat scratch feeder: <http://www.mktmkt.com/pavlovscat.html>.
 Pipolino cat feeding toy: pipolino.ca, pipolino.us.
 Planet Dog toys: www.planetdog.com.
 Slim cat feeding toy: petsafe.net.
 Smart Cat toys: esmartcat.com.
 Soft paws nail coverings: www.softpaws.com.
 Tricky treat ball – Fitness first treat ball – portion pacer (slows eating): omegapaw.com.

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Appendix C

This appendix contains the printed versions of forms that are available online but are not otherwise found as tables/boxes/forms within the chapter text.

Form/handout	Title	Page
C.1	Pet selection consultation questionnaire and resource list (client form #13, printable version available online)	
C.2	Socialization tips for puppy owners (client handout #3, printable version available online)	
C.3	Socialization tips for kitten owners (client handout #18, printable version available online)	
C.4	Training basic commands (cues) (client handout #2, printable version available online)	
C.5	Behavior consultation questionnaire (client form #3, printable version available online)	
C.6	Puppy play biting (client handout #20, printable version available online)	
C.7	Behavior observation and evaluation form (client form #15, printable version available online)	
C.8	Behavior consultation follow-up (client form #9, printable version available online)	
C.9	Informed consent for behavior-modifying drug use (client form #5, printable version available online)	
C.10	Infants, children, and dogs (client handout #17, printable version available online)	
C.11	Infants, children, and cats (client handout #16, printable version available online)	
C.12	Aggression release (client form #1, printable version available online)	
C.13	Counterconditioning to approaches at the food bowl (client handout #11, printable version available online)	
C.14	Teaching structured interactive training (SIT) for all interactions (client handout #13, printable version available online)	
C.15	Teaching "Leave it" (client handout #25, printable version available online)	
C.16	Teaching "Watch" (client handout #26, printable version available online)	
C.17	Teaching the pet to fetch and drop objects on command (client handout #7, printable version available online)	
C.18	Feline housesoiling therapy worksheet (client form #8, printable version available online)	
C.19	Basket muzzle conditioning (client handout #27, printable version available online)	

C.1 Pet selection consultation questionnaire and resource list (client form #13, printable version available online)

Pets are for life. Finding the best match for your home and family is not a science but there is a lot you can do to improve the chances of finding that perfect pet. While a large part of your pet's behavior will be shaped by your care and training (nurture), there is also a lot that might be genetically programmed or ingrained before you ever get your pet (nature).

The goal of a selection consultation is to help you choose a pet that is suited to your family, and to provide guidance to prepare you for your pet's arrival. If you are interested in a purebred, we ask that you first narrow your selection to a few breeds that appeal to you, since there are literally over 1000 dog breeds (recognized or unrecognized, depending on which registry you favor). Once you decide on these preferences, we can then discuss the pros and cons of each breed for your home.

To get some idea as to the size, shape, color, coat type, and other physical characteristics of each breed, you might want to begin by visiting a dog or cat show and interviewing some of the breeders. There are also numerous websites, some of which are listed below, that will help guide you through the selection process, even helping to prioritize breed traits. In addition, check with the kennel clubs, breed associations, breeder directories, and veterinary organizations in your country, state, or province.

On the internet, you can research the physical characteristics of the breed, but also the history of how, when, and why the breed was originally developed. This can give you excellent insight into the behavioral traits of the breed. However, some information on the web can be weighted for or against the breed depending on the writer's background and perspective. Therefore consider both the information and the source when evaluating the information and work with your veterinarian or a behaviorist to weigh the evidence when it seems conflicting. It is also important to consider health and behavior issues that are commonly seen in the breed when selecting the breed and lineage. See the references below and ask your veterinarian for information.

If you would rather adopt a dog or cat that is in need of a home, consider local humane societies, shelters, or rescue groups. Many of these organizations have excellent web resources both nationally and locally to help you find and select stray, abandoned, and relinquished pets. These organizations usually have a relatively large number of purebred dogs and cats available for adoption (e.g. www.petfinder.com, www.americanhumane.org, www.bestfriends.org, www.humanesociety.org).

Various factors should be considered in the adoption decision, including breed, age at adoption, the differences between males and females, as well as where to obtain the pet and what to look for when choosing the pet. Puppy and kitten assessment tests are not a very good way of predicting adult behavior, especially in puppies less than 4 months and kittens less than 3 months, although pets that already display overly fearful behavior at this age should be a cause for concern. As puppies and kittens mature, testing may become increasingly more accurate. Yet, many behavior problems, even those with a genetic component, may not begin to emerge until sexual maturity (6–9 months) or even behavioral maturity (1.5–3 years). Therefore you might learn a lot more by assessing the behavior of the parents if they happen to be accessible.

Finally there are many changes that can occur from the time you bring a new pet home as the pet develops and matures. Environment experience, socialization, and how you interact with and train your pet are critical influences that interact with the genetics of the pet. During the selection consultation you will get both medical and behavioral advice to get you off to a good start, providing for the needs of your pet, teaching your pet what is desirable, and preventing behaviors that might be undesirable.

Date of consult

Name:

email:

Address:

City/town:

Province/state:

Postal/zip code:

Phone:

Home

Business

Fax:

1. Indicate all family members in the household, including age and sex:

2. Indicate any other pets in your household and their age and sex:

3. Desired pet: ☐ Dog ☐ Cat

Breeds of interest: list up to 5

4. If you have no specific breeds in mind, list size, traits, and coat color and type that interest you:

5. For what reasons are you interested in obtaining a pet (choose one or more)?

☐ Companionship

☐ Guarding/protection

☐ Show/breeding

C.1 Pet selection consultation questionnaire and resource list (client form #13, printable version available online)—cont'd

- ☐ For the kids
☐ Sport/competition – agility / flyball – if yes, explain

☐ Work – hunting, herding – if yes, explain

☐ Other – if yes, explain

6. Have you ever owned a pet previously? Y/N
 If yes, describe the pet(s) and when owned:

7. Special needs:
 Does any family member have allergies to pets? Y/N If so, what pets and severity?

Are there any special considerations about your home that might need to be considered (e.g., physical disabilities, illness, infirmities, borders)?

Are there any restrictions on pet ownership in your home or building? Describe:

8. Household (check one or more that apply)

Describe the type of home you live in:

- ☐ Single family detached – indicate approximate size:
☐ Town home or semidetached – indicate approximate size:
☐ High-rise/apartment – indicate approximate size:
☐ Basement flat/room – indicate approximate size:
☐ Owned ☐ Rental
☐ Fenced private yard – indicate approximate size:
☐ Unfenced yard – indicate approximate size:
☐ No yard ☐ Shared yard
☐ Nearby park(s) ☐ Nearby dog park
☐ Busy street ☐ Quiet street ☐ Rural
☐ Other

9. Daily schedule/home environment

Indicate your basic family schedule, including how long the pet will be left alone at any one time during the average work or school day.
 What is the longest time your pet will need to be left alone?

Where do you intend to house your pet when you are out of the home?

Where do you plan for your pet to sleep at night?

Will you be using a pen or crate confinement/training? Y/N If yes, describe:

10. Financial (choose one)

- ☐ I have significant concerns about the cost of pet ownership as I will need to watch my expenses
☐ I have mild concerns about the expenses of owning a pet
☐ I have no concerns about the cost of owning a pet

Continued

C.1 Pet selection consultation questionnaire and resource list (client form #13, printable version available online)—cont'd**Below is a list of financial obligations that responsible pet ownership might entail:****a) Regular expenses**

Food, treats, toys, license, cleaning supplies, grooming supplies, grooming, day care, dog walker

Healthcare: regular veterinary examination – vaccines, fecal, laboratory screening tests, parasite protection, dentistry, insurance, geriatric care, laboratory tests

b) One-time or infrequent

Purchases: pet, bowls, leash, collar, identification (e.g., microchip, name tag), cage

Healthcare: spay/castrate, puppy/kitten class, adult obedience

c) Occasional recurrent expenses

Boarding, medical care for sickness, illness, emergency

Pet selection references**Examples of useful internet sites:**

akc.org, ckc.ca, www.thekennelclub.org.uk, avma.org, ovma.org, cfainc.org, www.cca-afc.com, dogs-in-canada.com, www.ankc.org.au, dogbreeds.net, www.dogadvisorycouncil.com/puppy

Breed catalogs (see dogwise.com, amazon.com)

There are numerous publications in this category. Here are a few suggestions;

Fogle B. Eyewitness companions: cats. Dorling Kindersley, New York, 2006

Fogle B. Eyewitness companions: dogs. Dorling Kindersley, New York, 2006

Iams cat breed guide: <http://www.iam.com/cat-breeds/breedguideindex.aspx>

Iams dog breed guide: <http://www.iam.com/dog-breeds/breedguideindex.aspx>

Morris D. Dogs: the ultimate dictionary of 1000 breeds. Trafalgar Square, London, 2008

Other resources

Ackerman L. The contented canine: pet parenting for dog owners. ASJA Press, New York, 2001

Ackerman L. The genetic connection: a guide to health problems in purebred dogs, 2nd edn. AAHA Press, Lakewood, CO, 2011

Advisory Council on the Welfare Issues of Dog Breeding <http://www.dogadvisorycouncil.com/puppy>

Alterdon D. The cat selector, how to choose the right cat for you. Barron's, Hauppauge, NY, 2011

Alderton D. The dog selector, how to choose the right dog for you. Barron's, Hauppauge, NY, 2010

Benjamin CL. The chosen puppy: how to select and raise a great puppy from an animal shelter. Howell Book House, New York, 1990

Coren S. Why we love the dogs we do: how to find the dog that matches your personality. Firefly Books, Richmond, Ontario, 2000

Fogel B, White PH. New dog: choosing wisely and insuring happily ever after. Firefly Books, Richmond, Ontario, 2008

Hart BL, Hart LA. The perfect puppy. WH Freeman, New York, 1988

Kilcommons B, Wilson S. Paws to consider. Choosing the right dog for you and your family. Warner Books, New York, 1999

Lowell M. Your purebred kitten – a buyer's guide. Henry Holt, New York, 1995

Peterson C. Please oh please can we get a dog? Parents' guide to dog ownership. Howell Book House, New York, 2004

Sternberg S. Successful dog adoption. Howell Book House, New York, 2003

Some breed selector tools on the internet

Organization	web site
5-Star Dog	http://www.5stardog.com/dog-breed-selector.aspx
Animal Planet: cats	http://animal.discovery.com/breedselector/catselectorindex.do
Animal Planet: dogs	http://animal.discovery.com/breedselector/dogselectorindex.do
Breeder Retriever	http://www.breederretriever.com/breedselector.php
Dog Breed Info	http://www.dogbreedinfo.com/search.htm
Dog Time Matchup	http://dogtime.com/matchup/start
Eukanuba Dog Breed match	http://www.eukanuba.com/en-US/dog-breed-selector.jsp
Good Housekeeping	http://www.goodhousekeeping.com/family/pets/dog-breed-quiz
Pedigree breed selection	http://www.pedigree.com.au/select/
Pet Care Information and Advisory Service	http://www.petnet.com.au/selectapet/choose-a-pet
Puppyfinder	http://www.puppyfinder.com/breedselector.php
Purina cat breed selector	http://www.purina.com/cat/breed-selector/default.aspx
Purina dog breed selector	http://www.purina.com/dog/breed-selector/default.aspx
Select Smart	http://www.selectsmart.com/DOG/

C.2 Socialization tips for puppy owners (client handout #3, printable version available online)

Even though dogs have been domesticated for thousands of years, each new puppy that comes into our world must learn about humans. Socialization is the process during which puppies develop positive relationships with other living beings. The most sensitive period for successful socialization is during the first 2–4 months of life. The experiences the pet has during this time will have a major influence on its developing personality and how well it gets along with people and other animals when it grows into adulthood. It is very important for puppies to have frequent, positive social experiences during these early months in order to prevent asocial behavior, fear, and biting. Puppies that are inadequately socialized may develop irreversible fears, leading to timidity or aggression. This is not to say that socialization is complete by 4 months of age; only that it should begin before that time. Continued exposure to a variety of people and other animals, as the pet grows and develops, is also an essential part of maintaining good social skills. It is also extremely important that your new puppy be exposed to new environments and stimuli at this time (e.g., sounds, odors, locations, sights, surfaces) to reduce the fear of the unfamiliar that might otherwise develop as the pet grows older.

Puppy socialization – what to do

It is essential that every puppy meets as many new people as possible (including babies, children, adults, and seniors), in a wide variety of situations, but be careful not to overwhelm it. Begin with calm introductions to one or two people at a time. If the pet handles this well, then more people, increased noise, and more activity can be added. It can be beneficial to ask each person who meets the puppy to give it a small piece of kibble or a tiny treat. This will teach the puppy to look forward to meeting people. It will also discourage handshyness, since the puppy will learn to associate new people and an outstretched hand with something positive.

Once the puppy has learned to sit on command, have each new friend ask it to sit before giving the treat. This teaches a proper greeting and will make the puppy less likely to jump up on people. You should make certain that the puppy has the opportunity to meet and receive biscuits from a wide variety of people, especially people who differ from those in the family home. In the case of puppy socialization, variety is definitely the spice of life. The fear that might arise from the way a person looks, acts, sounds, moves, or perhaps even smells might be prevented by exposure during the socialization period. In particular, every effort must be made to see that the young pup has plenty of opportunities to learn about children. They can seem like a completely different species to dogs since they walk, act, and talk much differently than adults. Running, screaming, bicycles, roller blades and skateboards are also some of the varied stimuli that might be more common when children are around. Puppies that grow up without meeting children when they are young may never feel comfortable around them when they become adults. In addition, if there is the possibility that you might want your pet one day to be a service or visitation dog, there are number of other sights, sounds, smells, actions, and interactions to which your dog should be exposed. These might riding on elevators, the sounds of hospital equipment, wheelchairs or the patient in a nursing home with a cane, walker, oxygen tank, or iv pole. Lack of experience with a wide variety of people during puppyhood is a common cause of social fear, avoidance, and biting.

Take the pup to visit friends' homes to interact with them and with their pets. The ideal home is one with calm children and calm pets that don't go out to parks or other areas where they might pick up diseases that could be spread to your puppy, and where the pets have received appropriate immunizations and parasite control. As soon as your veterinarian determines that your puppy is adequately vaccinated, take it on as many walks and outings as possible. Just be careful to avoid areas where stray dogs roam that might carry diseases.

Puppy classes

Attending puppy classes during the primary socialization period (which begins to wane by 12–14 weeks of age) is another excellent way of ensuring multiple contacts with a variety of people and other dogs. This relatively new concept in training involves enrolling puppies early, before they pick up bad habits, and at an age when they learn very quickly. Puppy training and socialization classes are now available in many communities where, with the proper healthcare precautions, puppies can be admitted as early as 8–10 weeks of age. These classes can help puppies get off to a great start with training, and offer an excellent opportunity for important social experiences with other puppies and a wide variety of people. Since there can be some health risks when exposing young puppies to other dogs and new environments, the best age to start your puppy in classes, and the best classes in your area, should be discussed with the family veterinarian. For further guidelines on puppy socialization and puppy classes, visit the American Society of Veterinary Behavior website at avsabonline.org.

Avoid unpleasant experiences

A young puppy's interactions should always be supervised to ensure nothing happens that might make it afraid of people. Go slow with socialization exposure, and if the pet ever seems anxious, take some time out and then re-expose it to people in slightly calmer situations.

In addition, avoid all physical punishment. Harsh scolding or punishing a young pet will damage its bond with you and weaken its trust in people. Techniques such as swatting the pup, shaking it by the scruff, rubbing its face in a mess, and roughly forcing it onto its back should never be used. Pets that are raised using these methods may grow up to fear the human hand, and are more likely to display avoidance or become fear biters. In general, any interactions with people that might make a puppy anxious should be avoided, particularly during the early months of its life.

Socializing takes time and patience, but the benefits are worthwhile, so be sure not to miss the opportunity to guide your pup through this important process. Proper socialization will help ensure that your pet grows up to be social, friendly, and well adjusted.

Best wishes for a long and happy relationship!

C.3 Socialization tips for kitten owners (client handout #18, printable version available online)

Even though cats have been domesticated for thousands of years, each new kitten that comes into our world must learn about humans. Socialization is the process during which kittens develop positive relationships with other living beings. The most sensitive period for successful socialization is during the first 3 months of life, especially from 3 to 9 weeks of age. The experiences the pet has during this time will have a major influence on its developing personality and how well it gets along with people and other animals when it grows into adulthood. It is very important for kittens to have frequent, positive social experiences during these early months in order to prevent asocial behavior, fear, and biting. Kittens that are inadequately socialized may develop irreversible fears, leading to timidity or aggression. This is not to say that socialization is complete by 3 months of age; only that it should begin before that time. Continued exposure to a variety of people and other animals, as the pet grows and develops, is an essential part of maintaining good social skills. It is also extremely important that the kitten be exposed to new environments and stimuli at this time (e.g., sounds, odors, locations, sights, and textures) to reduce fear of the unfamiliar that might otherwise develop as the pet grows and ages.

Kitten socialization

It is essential that every kitten meets as many different types people as possible in a wide variety of situations, but be careful not to overwhelm it. Begin with calm introductions to one or two people at a time. If the pet handles this well, then add more people, increased noise, and a variety of activities. It can be beneficial to ask each person who meets the kitten to give it a small piece of food or a tiny treat. This will teach the kitten to look forward to meeting people. It will also discourage handshyness, since the kitten will learn to associate new people and an outstretched hand with something positive. Kittens that are wary of taking food or physical contact from strangers may be enticed if the treat is tossed to the kitten or if the visitor is given a play toy to engage the kitten in a game of chase.

In particular, it is essential to ensure that the young kitten has plenty of opportunities to learn about children. They can seem like a completely different species to the young kitten since they walk, act, and talk much differently than adults. Kittens that grow up without meeting children when they are young may never feel comfortable around them when they become adults. Similarly, since different people can act, look, sound, or even smell different, the more variety in the kitten's life, the better. Lack of experience with a wide variety of people, especially young children, is a common cause of social fear, avoidance, and biting.

You should also take your kitten to visit friends' homes to interact with them and with their pets. The ideal home is one with calm children and calm pets that don't go out to areas where they might pick up disease organisms that might be passed to your kitten and where the pets in the home have had relevant vaccinations and appropriate parasite control.

Avoid unpleasant experiences

The young kitten's interactions should always be supervised to ensure nothing happens that might make it afraid of people. Go slow with socialization exposure, and if the pet ever seems anxious, take some time out and then re-expose it to people in slightly calmer situations.

In addition, be careful to avoid physical punishment or any other interactions with people or experiences in new environments that might make the kitten anxious. Harshly scolding or punishing a young pet will damage its bond with you and weaken its trust in people. Techniques such as swatting the kitten, tapping its nose, shaking it by the scruff, or rubbing its face in a mess should never be used. Pets that are raised using these methods may grow up to fear the human hand, and are likely candidates to become fear biters. In general, any interactions with people that might make a kitten anxious should be avoided, particularly during the early months of its life.

Kitten socialization classes

Although kitten socialization classes are not as popular as puppy classes, consider enrolling your kitten in one of these classes if they are available in your area. They are an excellent way to ensure multiple contacts with a variety of people and other cats and to learn more about the care, handling, and training of kittens.

Socializing takes time and patience, but the benefits are well worthwhile, so be sure not to miss the opportunity to guide your kitten through this important process. Proper socialization will help ensure that your pet grows up to be social, friendly, and well adjusted.

Best wishes for a long and happy relationship!

C.4 Training basic commands (cues) (client handout #2, printable version available online)

Introduction

Obedience training is important for all dogs. The best way to get the job done is to start early in the pet's life, use positive reinforcement, and avoid punishment. This will help ensure quick learning and make the training process fun. If you begin the pet's training when it is a puppy, you'll find that early training, well-timed rewards, repetition and consistency can help establish control, socialize your pet, prevent undesirable behaviors, and control unruly behaviors.

Food Lure Training

An easy, nonforce method for teaching obedience commands involves the use of small bits of food for training lures and reinforcements. Most dogs are very motivated to take food, so the best choice for a food lure is the pet's own dry food. If this is not sufficiently appealing, try small morsels of semimoist dog treats or freeze-dried chicken or liver. An excellent time to train the picky pet is just prior to its dinner time, since the dog should be hungry, more focused on the food, and quicker to respond. On the other hand, a dog that gets very excited around food should be trained after dinner.

You can use the food to lure the pet into the response you want as you give the command, and then the food will be given as a reward immediately following the response. One of the advantages of food lure training is that your pet will learn two cues for each command (visual and auditory). As soon as your pet is responding to the food lure, begin to hide the food in your hand (or keep the food in your other hand) while you use the hand signal and verbal commands to cue the behavior and continue to give the rewards for success. Learning a double signal (auditory, visual) will make the pet twice as likely to respond to you. Once a behavior is learned, food rewards should be used intermittently, and only for longer, calmer, or more accurate behavior. You'll do this by picking only the best responses (e.g., best position, quickest response) to reward, and withholding food rewards for less exact responses during subsequent training sessions.

To help ensure that the pet learns with a minimum number of mistakes, avoid training when it seems overly energetic or has a shorter attention span. Work in a quiet area, keep the training sessions short, and stop before the dog begins ignoring commands. When the pet's response to commands becomes dependable, you can gradually take the training to environments with increasingly stronger distractions. Be patient, take your time, and make sure the pet knows one command well before proceeding to the next.

Your tone of voice is important. Use a happy tone of voice when teaching, "Come," "Sit," and "Down." An upbeat tone will help motivate the pet to move. Use a deep, commanding but calm tone is more likely to cause the pet to hold its place when teaching "Stay." You should avoid repeating a command over and over without getting a correct response. If you do this frequently, the pet will learn that it does not have to obey the first time you ask. Right before you give a food reward, always say "Good dog." The pet will learn to associate the words with food and the words will eventually become a valuable secondary reinforcer to sustain the response as the food is gradually withdrawn.

Recall on command

This is a fairly straightforward command to teach. Say the dog's name so it turns and makes eye contact with you. Extend your hand toward the pet with a piece of food in it. Wave your hand with the food towards you and say, "Come" as the pet runs to you. Say "good dog" as you begin to give the food. Take a few steps back. Show the pet a second piece of food, say its name, and repeat the recall for food. The pet will learn two cues to come on command, a verbal cue and a visual cue. An alternate way to teach the recall is to toss a piece of food for the pet to chase. After it picks it up, say "Come" and wave your hand towards you. When the pet runs up to you, ask it to sit, say "Good dog" and give a piece of food. Gradually phase out the food reward.

Sit on command

With the pet in a standing position, hold a small piece of food in front of its nose. In a steady, slow motion, move the food over the dog's head. The pet's nose will point up and the rear end will ease down to the floor, taking it into the sit position. Say, "Sit" as the rear hits the floor and give the food. Avoid holding the food lure too high over the head or the pet will jump up instead of sit. It won't be long before you'll notice that the dog will go into the sit position when you sweep your hand in an upward movement, even without food. As soon as the pet learns this command, you should ask it to sit before it gets anything it wants. If you are consistent with all your rewards, your dog will learn that to get what it wants, it needs to do the behavior that you want it to learn. (see structured interaction handout – SIT (handout 13))

Down on command

Begin this lesson with the dog sitting on a smooth surface. Quickly move a piece of food downward from in front of its nose to the floor directly next to its front paws. As the front end of your pet slides down to the floor, say "Down" and give the food. You must make sure that you keep the food on the floor close to the pet's paws. Otherwise it is likely to stand up and walk toward the food lure. Eventually, a downward sweep of your hand by itself will cause the dog to go into the down position. This command may take a little more patience and time than the first two. Only use the word "Down" when you are teaching this command. If you use the same word to tell the pet to get down off counters and furniture, or when jumping on people, it may be confused about its meaning.

Stay on command

The "Stay" command is probably the most challenging command to teach a young dog. Don't attempt to teach this command unless the pet is calm and you can get it to focus on you. A helpful strategy is to calm the dog down with a long walk or play session just prior to training.

Ask the pet to "Sit" without using a food lure. The second the pup sits, lean toward it, look it in the eye in an assertive manner, extend the palm of your hand toward it, and say "Stay" in a firm not angry tone. Wait only 1 second, then calmly praise it while the pet is still sitting, give a release command, "OK," and hand it a small food reward. Repeat the command, adding a second to the stay following every five or more repetitions. Once the pet can stay for at least 20 seconds, you can begin working on distance. Ask the pet to "Stay," and take one step away from it. Gradually work from a 1-second to a 20-second stay at this position, then move back two steps and repeat the process. In no time at all, you will have the pet staying for longer periods at longer distances.

Common causes of failure to teach the "Stay" command include attempting to make the dog stay too long or at too far a distance too quickly, as well as attempting to get the response when the pet is too active or distracted. Try to anticipate when the pet will become bored with training and

C.4 Training basic commands using food lure training (client handout #2, printable version available online)—cont'd

stop well before then. If the pet's eyes start to wander or it seems like it might move too early, calmly repeat "Stay" in a serious tone of voice, make strong eye contact, and lean toward it. Maintain the stay for just a few more seconds, and then reward and release the pet.

Heel on lead

The goal is to teach the pet to walk without pulling on a slack leash. Before training, try to tire out the pet out with some aerobic play. The initial training should be short and held inside without distractions. Later, training can be moved to the yard, and then to sidewalks. If the pet is incorrigible about pulling, use a head halter or front control halter for more control.

To get a young puppy used to its leash, put the leash on the pet and hold it loosely. Toss tiny treats on the floor one at a time ahead of the pup. Lightly hold the lead as the pup moves forward to eat each piece. Gradually apply a bit more tension on the lead. Repeat outdoors on the patio, deck, and in the yard.

Begin the heeling session by asking the pet to "Sit." Stand on the pet's right side, facing the same direction. Take the leash in your left hand, holding it about 500 cm (2 feet) from the pet. Show the pet a treat or toy held in the right hand. Say "Heel" and walk forward, keeping the pet's attention on the object in your right hand. Take a few steps, stop, ask the pet to "Sit" and reward it with the food or a pat on the head. Repeat, gradually taking more steps between each "Sit" command. Use an upbeat, animated tone to keep the pet's attention. Say "Heel" and reward the pet with praise and/or a treat whenever it walks along at the same speed and the leash is slack. If the pet begins to pull forward, immediately turn and walk in the opposite direction. When the pet catches up, ask it to "Sit" and repeat the above exercise. Once the pet does well in the home and yard, take the exercises to sidewalks in the neighborhood.

Other training options

Watch, wait, and reward

While proper timing of rewards is essential to teach the pet the desired behavior, food lures are not the only way to train. In fact, if you carefully and constantly watch your pet, at some point you'll see the puppy do the very behavior you want to reward (e.g. sit, lie down, or come). The critical issue is for you to reward the behavior immediately while the puppy needs to learn what behavior gets the reward. If a reward is given immediately and consistently every time the puppy does the desired behavior, and only when the puppy does the desired behavior (predictable consequences), the pet will begin to repeat the behavior as soon as it learns what it needs to do to get the reward. At this point you can say the word (e.g., "Sit") just as the behavior begins. This teaches a command or cue to get the pet to start the behavior sequence that gets the reward. This same technique with immediate reward timing and repetition can be used for any behavior that you observe (come, lie down, go to your bed, drop it). For example, to teach a drop command you can follow your pet while carrying toys, and give a small treat each time the toy is released or "dropped" from the puppy's mouth. Add a cue word when you see the pet is about to drop the toy. Soon your puppy may be bringing you toys and dropping them just to get its reward, at which point you can move on to training another behavior with your rewards, such as lying down quietly or going to rest in its bed. However, for the pet to understand what behavior is getting the reward, focus on training only one behavior at a time until it is learned.

Clicker training

Another excellent way to reward desired behaviors immediately is to use clicker training, where a clicker is paired with a favored food treat. Once your dog knows that a click means that a treat is coming, you can watch closely until you see the behavior you want your dog to learn, and time the reward even more accurately by clicking as soon as you see the desired behavior and following this shortly after with a food reward. As with lure training, you can then gradually achieve more accurate responses by timing the reward for longer or better responses.

A little extra physical control – leash and head halter control

Another excellent way to help guide a pet into the behavior you want it to learn is to keep a leash attached to maneuver the pet gently into a sit, down, or come, which can then be immediately rewarded. Once successful, say the cue word just before you pull on the leash and very soon the pet should be doing the behavior with the word itself, with less and less need for the pull. Puppies and dogs that are excitable, easily distracted, or hard to get focused may respond better if a leash is used with a head halter to prompt the pet gently to get the dog to focus and guide it into the desired behavior e.g. sit, come. A leash and head halter or leash and front control body harness are particularly useful as aids in teaching the dog to walk on loose leash.

Regardless of how you get the desired outcome, the common element is to give the reward immediately each time you get the behavior until it is consistently repeated, and to add a cue word before the sequence so that the pet learns a word or command that is associated with the behavior so that the behavior will be repeated by the pet for a reward each time it hears the command (or sees the visual signal).

C.5 Behavior consultation questionnaire (client form #3, printable version available online)

Please return this form at least *48 hours* prior to your appointment. Appt time _____ Date _____
 If the forms are not received 48 hours prior to the appointment time, you may be requested to reschedule.

Dx: _____

Owner: _____ email: _____ Date: _____

Address: _____ Zip: _____

Home phone: _____ Business phone: _____

Family veterinarian: _____ Family veterinarian's phone: _____

Would you like a postconsultation summary letter sent to your veterinarian? Yes ☐ No ☐ No preference ☐

Referred by / How did you hear about us? _____

Please fill out this form carefully and completely. The information which you provide will be very important for diagnosing and treating your pet's behavior problems.

General information

Pet's name: _____ Dog ☐ Cat ☐ Other: _____

Age: _____ years Sex: M/F Breed: _____ Color: _____ Weight: _____

Neutered/spayed: yes [] no [] At what age? _____ At what age did you obtain the pet? _____

Where did you obtain this pet? friend, breeder, pet shop, humane society, other _____

For what purpose was this pet obtained? companionship, protection, breeding, show,
 other _____

Time spent indoors: _____ % outdoors: _____ % Is this pet left alone during the day? _____ How long? _____

In what area of the house or yard is the pet kept when

a. Family at home:

b. Family away:

c. Family asleep:

d. Guests are visiting:

Access to yard through dog/cat door? ☐ yes ☐ no

Describe the pet's personality:

Describe the pet's behavior:

a. just prior to your departure

b. just after your return

Diet: _____ % dry (brand _____) _____ % canned (brand: _____)
 _____ % table scraps Supplements: _____

When is the pet fed? _____ By whom? _____

Date of last physical exam: _____ List all major surgical or medical problems and approximate dates:

List all medications (dosage size in mg, schedule, and duration) that have been prescribed for a behavior problem and the results:

List all medications (including dosage and schedule) currently being taken by this pet:

List the number of other pets in the home:

Cats: female intact _____

female spayed _____

male intact _____

male neuter _____

Dogs: female intact _____

female spayed _____

male intact _____

male neuter _____

Other: _____

What toys/types of play does the pet enjoy?

What amount of exercise or opportunity to exercise is given to the pet?

Does he or she run free in the neighborhood? _____ How often? _____

Has this pet had any formal obedience training? y ☐ n ☐ Class ☐ Private instructor ☐ I trained my pet at home ☐

Continued

C.5 Behavior consultation questionnaire (client form #3, printable version available online)—cont'd

What type of collar do you use for training? flat choke chain pinch/prong head halter
 Grade the success: failed ☐ fair ☐ good ☐ excellent ☐ Please describe the type of training:

What will the pet do on command?

Does this pet get along with other animals? y ☐ n ☐ If not, please explain:

How does this pet react to unfamiliar people?

What persons are in the pet's environment? Their schedules? Children's ages?

Behavior problem information

Please describe your pet's behavior problem(s):

What month/year were the problem(s) first noted?

Where and under what circumstances was each problem first noted?

Describe the situations(s) in which the problem is most likely to occur?

The problems occur:	always	usually	rarely	never
when the pet is left alone	☐	☐	☐	☐
in the presence of the family members	☐	☐	☐	☐
during the night when the family sleeps	☐	☐	☐	☐

Frequency of occurrence: _____ times per day _____ times per week _____ times per month _____ times per year

Has there been a change in the frequency or appearance of the problem? ____ Please describe:

What has been done so far to correct this problem?(e.g., discipline, confine, obedience training)

What was the pet's response to the correction?

Were there any significant changes in this pet's environment prior to the appearance of this problem?

- | | |
|---|--|
| ☐ a. moved or redecorated | ☐ e. change in family schedule |
| ☐ b. boarded | ☐ f. new family member / roommate / pet |
| ☐ c. visitors (human or pet) | ☐ g. other |
| ☐ d. diet change | |

How did these changes affect your pet?

Please indicate any other behavior problems:

- | | | | |
|--|---|--|---|
| ☐ housesoils | ☐ swallows nonfood items | ☐ learning | ☐ fights |
| ☐ destructive chewing | ☐ shy | ☐ sleep | ☐ runs away |
| ☐ feeding | ☐ eats stool | ☐ play | ☐ destructive scratching |
| ☐ sexual | ☐ pacing | ☐ jumps on people | ☐ pulls hard on leash |
| ☐ grooming | ☐ aggressive | ☐ unruly | ☐ other |
| ☐ digging | ☐ barking | ☐ bites | |

Please describe all situations which are likely to elicit aggressive behavior, such as growling, nipping, biting, attacking, (e.g., petting, approached by adults, approached by children, only when in the car, reaching for, punishing, pushing, taking food or toys away, disturbed while sleeping):

If your pet has an aggression problem, describe at least the last two or three aggressive incidents in detail on the back of this page.

Please discuss in detail any other information which you feel is relevant to your pet's problem:

C.5 Behavior consultation questionnaire (client form #3, printable version available online)—cont'd

Housoiling data sheet

Family name: _____ Date: _____

Pet's name: _____

What percentage of the elimination incidents in the home are urine ____% stool ____%

Does this pet urinate when petted? n/y When excited? n/y When scolded / punished? n/y

Is there a preference for urinating inappropriately on	No	Yes	
upright surfaces (walls, sides of furniture, drapes)	☐	☐	_____ % upright
horizontal surfaces (floor, top of counters or furniture)	☐	☐	_____ % horizontal

Is there a preference for secluded areas (e.g., closets, under furniture)?

☐ No ☐ Yes

Do strays or pets from other households frequently visit or call outside windows, doors, or in the yard?

☐ No ☐ Yes

Surface preference for inappropriate elimination:

Rugs ____ clothing ____ paper ____ soil ____ linoleum or other hard surfaces ____

other _____ no preference ☐Age when housetrained ____ Never housetrained ☐

Method of training:

Outcome of training:

Medical history

	No	Yes	
Has this pet ever had cystitis (urinary bladder infection)?	☐	☐	Approximate dates: _____
Does any straining or pain accompany urination?	☐	☐	
" " defecation?	☐	☐	
Have you noticed blood in the urine?	☐	☐	
" " stool?	☐	☐	
Is there an increased frequency of urination?	☐	☐	
" " defecation?	☐	☐	
Has there been an increase in water consumption?	☐	☐	
Has there been an increase in the amount of urine voided?	☐	☐	
Does the stool have an abnormal appearance?	☐	☐	

Date of last urinalysis _____ Results: _____

Litterbox information (cats)

No Yes

Has this pet ever eliminated consistently in the litterbox? ☐ ☐When indoors, the pet defecates in the box ____ % of the time never defecates in the box ☐When indoors, the pet urinates in the box ____ % of the time never urinates in the box ☐

How many litterboxes are available? _____ How many are covered boxes? _____

How often is the litterbox cleaned? _____

Type of litter used in the litterbox: Standard clay ☐ Clumping ☐ other _____

Brand of litter used: _____ How long has this brand been used? _____

Where is the litterbox(s) kept? _____

Please draw a diagram of your house on the back of this form.

Indicate areas of inappropriate urination, defecation, urine spraying, litterbox positions (cats) and feeding areas.

C.6 Puppy play biting (client handout #20, printable version available online)

Why is my puppy nipping and biting family members?

Although often thought to be a teething behavior, nipping, mouthing, and biting in young dogs are generally forms of social play. Teething is more likely to involve gnawing or chewing on household objects. The first thing you must do is to provide a regular daily routine that includes ample opportunity for play. Social play with people could involve controlled chase and retrieve games, as well as long walks or jogging. Many dogs also enjoy engaging in tug games, which may be an excellent outlet for play biting, providing the games are directed toward appropriate play toys and objects (see below) and under human control. However, if the puppy's play becomes too rambunctious or aggressive, these games may not initially be acceptable.

Puppies need to learn to limit the force and strength of their bite (bite inhibition) so they feel threatened and do bite someone, it is less likely to be done with enough pressure to cause an injury. This is something they start to learn while with their littermates. It is one reason that puppies should not go to new homes until 7–8 weeks of age so that they have had time to practice social skills with other dogs. Often littermates play very rough and may even seem loud and aggressive. Sometimes when one puppy bites another one too hard it yipes; this startles the offending puppy and teaches it how hard to bite during play. These lessons are essential for a puppy and people should not intervene in most littermate puppy–puppy interactions. In addition, after puppies have been adopted into the new home, it can be extremely beneficial to have regular interactive social play periods with other dogs or puppies in the home or in the neighborhood. One of the things that puppies need to learn is how much pressure from their jaws causes pain. Without this feedback, a puppy does not learn to inhibit the force of its bite. Because *all* puppies are likely to bite at some point, this lesson is vital for human safety.

How can I stop play biting?

Be sure you are providing the puppy with adequate and appropriate play, exploration, attention, and exercise opportunities. Strategies to stop play biting include:

1. Prevention: adopt a puppy at 7 weeks of age that has had the opportunity to practice normal, social play with littermates and its mother.
2. Set the pup up to succeed: provide a “mouthy” puppy with toys for oral stimulation; soft toys, food toys and tug of war can help satisfy these puppies’ oral and exploratory needs.
3. Be consistent: family members should agree that the puppy is not allowed or encouraged to bite or nibble on a person’s hands, feet, or clothing. What seems cute and innocent in a puppy will not be so at maturity.

How is this lesson taught?

When puppies play with each other, if one puppy bites another too hard, the bitten puppy will yelp, and may stop playing and leave. This sends the message to the puppy that its bites were too hard and if it wishes to continue to play, it needs to be gentle. However, people often do not send this message to their puppy. In the beginning, some owners might allow their puppies to chew and bite on them without any interruption and the puppy assumes that the behavior is acceptable. Children appear to be most vulnerable because their attempts at stopping the biting may not be properly timed or sufficiently abrupt to stop the puppy from biting. In fact a child’s response is often seen by the puppy as an invitation to increase its level of chase and play. Adult supervision or a head halter for training (discussed below) should help to ensure more immediate success.

The message people should send is that mouthing and chewing on hands are painful and lead to immediate cessation of play. All family members must consistently follow the rules for the puppy to understand and learn what is considered desirable behavior and what is not. However, regardless of the technique, you cannot expect the play biting to cease until you first ensure that you are giving regular and sufficient opportunities for play. If your puppy begins to bite or chew and tug on clothing, immediately stopping play (negative punishment) is the preferred response, or walk away if the puppy persists. The message is that all social interactions with you will stop as soon as biting begins. Sometimes a sharp “off” command can be helpful to indicate that social interactions will cease if the biting continues. Playing with the puppy when it is not attention seeking, nipping, or biting is the goal. If all family members are consistent in their responses, the puppy should quickly learn that play biting leads to inattention rather than play. If you teach your puppy to sit or lie quietly before each play session, you should soon have your puppy trained that these behaviors, and not play biting, will be rewarded with a play session.

Having a leash attached at all times during interactions and play can be an excellent means of preventing undesirable behavior, as well as prompting and teaching desirable behavior. Another technique is to emit a sharp “Yip” or “Ouch” as soon as biting begins so that the puppy backs off. Remember, any contact with the skin should lead to an immediate cessation of play and attention. This sends the message to the puppy that the bites are painful and that biting will cause the end of play. Alternately, a sharp “Off” command and quickly backing away can be effective. Using a verbal cue such as “Yip,” “Ouch,” “Off,” or “Enough” is intended to interrupt the behavior and indicate that play and attention will now cease. This training usually works for those family members that have good timing, are consistent, and clear in their responses. If the puppy persists, chases or immediately repeats the behavior, walking out of the room and closing the door can help to teach the puppy that biting leads to immediate inattention.

What if my puppy keeps biting?

Other techniques are often suggested for play biting. Some involve harsh discipline, like slapping the puppy under the chin or forcefully holding the mouth closed. Remember, pain can cause aggression and cause the puppy to become anxious, fearful, defensive, or perhaps more excited. These techniques also require that you grab an excited puppy, which is not an easy thing to do! Some puppies may even misinterpret attempts at punishment as rough play, which in turn might lead to an increase in the behavior. Physical methods are not recommended. Owners who cannot inhibit the puppy with a yelp could consider a shaker can, water or air spray, noise alarm, or ultrasonic device as soon as the biting becomes excessive. The loud noise or spray is used to startle the puppy, which will likely back up and stop biting. When that happens the puppy should immediately be praised and gentle play and interactions resumed.

The use of a head halter with a remote leash attached allows the puppy to play and chew, but immediate pressure on the leash can redirect and successfully close the mouth and stop biting or chewing as soon as it becomes undesirable. By simultaneously saying “No biting,” most puppies will quickly learn the meaning of the command. As soon as the puppy stops, the tension on the leash can be released. If the biting resumes then a gentle and immediate pull and release may be needed until the puppy remains calm, at which point the play can be resumed as long as biting

C.6 Puppy play biting (client handout #20, printable version available online)—cont'd

does not begin again. This is one of the quickest and most effective approaches to stop the biting and get immediate control of the muzzle and mouth, and is useful for owners who are not gaining sufficient verbal control.

Remember that this kind of biting is a component of play behavior in puppies. Play is a form of social interaction and your puppy is practicing its social and communication skills. Realize that your puppy is trying to play with you, even though the behavior is rough. Play-motivated bites still hurt! Also remember that each puppy and breed has a different level of intensity or a slightly different form in which play is exhibited so try and match the length and type of play to the needs of the puppy. Be assured your puppy is not trying to dominate or control you. Your puppy needs adequate play and each puppy has different needs. Be certain that you are initiating and scheduling attention and play often enough to meet your dog's needs. Hounds may enjoy games in which they use their nose to find interesting treats or just a long walk with opportunities to spend time with nose to the ground. Retrieving, agility, flyball, and even tug games with toys encourage play that should not lead to mouthing of family members. Keep track of which types of play seem to get the puppy too excited and these should be avoided to help prevent biting behavior. Be sure to provide enough appropriate outlets for energetic puppies; if you aren't meeting your puppy's social, exploratory, and energy needs then these strategies will not work!

Can I play tug games with my puppy?

Games of tug and pull can be a good way for the puppy to expend energy while playing with family members. In this way the puppy can be given an acceptable outlet for pulling, biting, and tugging rather than on the clothing or body parts of people. The rule is the person should stop the game abruptly and socially withdraw anytime the puppy's teeth touch human skin or clothing or the puppy becomes overly excited and agitated. In addition, the tug-of-war game provides an opportunity to teach the puppy to give up toys on command. However, tug games are only acceptable if they remain under your control, if play biting and overexuberant play do not result in aggression, if the puppy's teeth remain on the toy rather than human body parts, and if possessive behavior does not develop over the toy. Select a few tug toys for playing this game and be certain that you are the one to start each session. It might be best to keep the toy(s) out of the puppy's reach until it is time to play the game and to use the game and toy as a reward for training, e.g., sit before play or retrieve. Throughout the play session, if the puppy gets too excited or begins to grab hands or clothing, immediately cease play and begin again only when the puppy is settled. Animation and exuberant play are acceptable; biting on people or their clothing is not! Food rewards can also be used at the outset to encourage the puppy to stop and give up the toy. It's actually a very good idea to teach the pet to release objects on command before engaging in tug games. At the end of each tug session, teach the puppy to give up the toy and reward with a favored chew or feeding toy. If successful, this type of play provides you with a means of controlled interactive play, as well as teaching the puppy to give up the toy on command.

Following each play session, give the puppy a chance to eliminate and some down time. Try and use a crate or confinement pen with object play toys (food-stuffed toys, chews) that have been saved for confinement time so that the puppy can play with the toys or take a nap until the next scheduled play, exercise, training, or elimination session is due.

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C.7 Behavior observation and evaluation form (client form #15, printable version available online)

Home ☐ Hospital ☐ 1st Visit ☐ Re✓ ☐ Weight _____ Time _____ hours Date: _____

Pet: _____ Owner: _____ Attending: _____

Observations

Submissive 0-----10 Assertive 0-----10 Shy 0-----10 Bold 0-----10

Fearful 0-----10 Confident 0-----10 Avoids 0-----10 Play 0-----10

Withdrawn 0-----10 Investigates 0-----10 Vigilance 0-----10 Seeks contact 0-----10

Anxious 0-----10 Relaxed 0-----10 Dog aggressive 0-----10 Dog friendly 0-----10

Calm 0-----10 Excitable 0-----10 Human aggressive 0-----10 Human friendly 0-----10

CommentsResponse to peopleResponse to interviewer

Approach / greeting

Command response Come Sit Stay

Physical contact: Wants it Likes it Indifferent Tolerates Avoids Aggressive Not attempted

Treats

Dry liver Ignore-----Excited Liver whiz Ignore-----Excited Other Ignore-----Excited

Response to family

Interaction

Handling

Solicit attention

Command response Come Sit Stay

Response to othersResponse to animalsResponse to movementResponse to sound

Head halter: v well tolerate ---well tolerate---mild resist---mod resist---much resist---fought/failed

Muzzle: v well tolerate ---well tolerate---mild resist---mod resist---much resist---fought/failed

Shake can: Ign-----N-----XS Comp. air: Ign-----N-----XS _____ Ign-----N-----XS

Slap notebook: Ign-----N-----XS Whistle: Ign-----N-----XS

C.8 Behavior consultation follow-up (client form #9, printable version available online)

Date: _____

Pet's name: _____ Breed: _____

Cat ☐ Dog ☐ Age _____ Sex _____ Neutered _____ Date of initial consult: _____

Owner's name: _____ Phone: _____

Initial complaint(s): _____

Please use the following rating scale to answer the questions below

0 This question is not applicable

1 I strongly agree with the statement

2 I agree with the statement

3 I neither agree nor disagree with the statement

4 I disagree with the statement

5 I strongly disagree with the statement

1 ☐ The session was too long for the nature of the problem2 ☐ The session was too short for the nature of the problem3 ☐ The staff were helpful and knowledgeable in setting up the consultation4 ☐ I was satisfied with the way my pet's care was handled5 ☐ The doctor explained the problem clearly6 ☐ I was satisfied with the explanation of the problem7 ☐ The doctor explained the treatment plan clearly8 ☐ The doctor was well informed with respect to this type of problem9 ☐ The treatment plan for my pet was not too complicated10 ☐ The treatment plan for my pet was complete enough11 ☐ I was able to begin the behavioral program12 ☐ I was able to complete the behavioral program13 ☐ The handouts and resources suggested were useful14 ☐ The product suggestions were useful15 ☐ The drug or supplement suggestions were useful16 ☐ I had sufficient opportunity for follow-up17 ☐ I was satisfied with the outcome of the behavior therapy18 ☐ The consultation fee was appropriate19. I still have my pet Yes / No ☐ My pet died from unrelated causes☐ I gave my pet away due to its behavior problem ☐ My pet was put to sleep due to its behavior problem

21. My pet's behavior is

☐ Worse ☐ Same ☐ Mildly improved ☐ Moderately improved ☐ Resolved ☐ Managed but not resolved

Please list treatments used and level of improvement: 1 = none; 2 = mild; 3 = fair; 4 = good; 5 = resolved.

Behavioral technique, drug, or product used**Indicate level of improvement and comments**

Additional comments _____

C.9 Informed consent for behavior-modifying drug use (client form #5, printable version available online)

Pet's name: _____ Sex: _____ Age: _____ Weight _____

Owner name: _____

Owner address: _____

City: _____

Telephone: _____ Email: _____

I, the undersigned, being the owner or duly authorized agent for the owner of the above animal, understand that the drug being prescribed, dispensed, or administered is not approved for use in dogs and/or cats for the condition being treated. This means that safety, effectiveness, and side-effects have not been comprehensively established for the purpose or species used.

☐ This drug is being dispensed in its original form but is not licensed for the use or species for which it is licensed.

Name of drug: _____

Dose/frequency _____

Special instructions: _____

The drug is labeled for use in (indicate species and use) _____

or

☐ This drug has been compounded. It has not been approved by regulatory authorities for use in this format and has not undergone rigorous testing for efficacy or stability. However, there is no equivalent veterinary licensed product in a dose or strength that is suited for my pet's needs.

Name of drug: _____

Frequency/dose _____

Special instructions: _____

This drug is licensed for use in its original form for (indicate species and use if any) _____

I understand that the drug is being used in a manner that is off label and I accept the consequences of its use. Although I understand that the drug is being prescribed in the hopes that it will be beneficial for my pet, I will not hold the veterinarian responsible for any adverse effects, be they physical or behavioral, that might arise from the use of this drug. I have been advised of the potential side-effects, adverse effects, and

instructions for monitoring, including: _____

I have been advised to discontinue the use of the drug and seek veterinary care immediately should any adverse or unexpected effects be exhibited. Since this drug is being used in an attempt to modify or alter behavior, I have also been advised that if there is an undesirable change in my pet's behavior or the problem gets worse, the drug should be discontinued and I should contact my veterinarian. I understand it is possible that this drug may not alter the course of the behavior problem, and that my animal may continue with the behavior problem whether or not the medication is administered. I also understand that since the product is not licensed for this use all potential adverse effects may not be known at this time. I will follow my veterinarian's advice regarding any laboratory or clinical testing required to safeguard against side-effects and to allow adequate ongoing patient monitoring. No other drugs, herbal remedies, or supplements will be used at the same time as this medication except as discussed with my veterinarian.

I hereby give my informed consent to the administration of this drug to my animal. I accept full responsibility, legally and financially, for all actions that may occur from the use of this drug.

I have been advised that a follow-up examination or assessment is next due on: _____

Signed: _____ Print Name: _____

Date: _____

C.10 Infants, children, and dogs (client handout #17, printable version available online)

Preparing puppies for children

Preparation for a good relationship between the pet and children begins when the dog is a puppy. To accomplish this, there should be frequent opportunities for the young pup to meet children during its early months of life. In fact, up to 3 months of age, puppies are most social, and the experiences they have and the people they meet at this age can make a lifelong impression. However, ongoing positive exposures through to adulthood are also necessary to maintain healthy social relationships. Of course, genetics also plays a role in how a dog interacts with people and other animals.

Puppies should be introduced to children when they are calm and treats should be used to facilitate introductions. Puppy classes that encourage family attendance can be a way to meet children in a controlled environment. Early positive interactions help prevent the development of fear, avoidance behavior, and aggression toward children when the pet is older. Another concept the young pup needs to learn is that being touched by people can be a pleasant experience. However, the reality is that most pets will have some limits on when, how frequently, with whom, and the quality and type of contact that they will tolerate or enjoy.

All family members should make a point of gently and positively handling the puppy in all the ways that a child might touch it. Making positive associations (e.g., with treats or during play) while touching the tail, ears, and body, and grasping the collar as well as teeth brushing, grooming, and nail trimming should help the dog adapt to contact with all parts of the body, which might be similar to what might be encountered with a child. Any type of physical punishment, threats with a hand, or forceful interactions (e.g., pinning, roll over) should be avoided. All pets must learn that the human hand is friendly and not to be feared (i.e., associated with treats, receiving toys, and affection). If the pet associates hand movement with discomfort, it might bite when a child moves a hand toward it.

Some dogs show aggression when approached while they eat. This behavior might be avoided by teaching the young pup that it is good to have company at dinner time. A family member could occasionally sit on the floor with the puppy while it eats. During this time, treats can be intermittently added to the food bowl or offered to the puppy while eating. Combine this with gentle petting while giving the treats. The family can pick up pieces of kibble from the bowl, and hand feed them to the puppy. The bowl can also be periodically removed for few seconds, and a small piece of meat or cheese added and then the bowl placed back on the floor. Family members should occasionally drop a piece of meat or a chunk of canned food into the bowl as they walk by. By doing these exercises, the pup should look forward to having people nearby at meal times and that humans will not steal their food. However, if any of these exercises cause fear or apprehension, the action should cease and the family should seek veterinary guidance. Repeatedly taking the food bowl away while the pet is eating without a positive association (e.g., getting a special treat) will just irritate the pet and should be avoided.

Preparing the adult dog for the new baby

The first thing to consider is the dog's temperament. All types of aggression should be considered potentially dangerous, especially if the dog growls or snaps when touched, disturbed while eating, playing with toys, or resting. If the dog exhibits any type of aggression this should be managed or resolved before the baby arrives. Even if the dog gets along well with children, the child that inadvertently gets too close to a dog that exhibits territorial aggression may be injured. Young children are more likely to be bitten by family pets or familiar dogs than unfamiliar dogs. Therefore, even if improvement is achieved, the family should be aware of any potential risks and have a practical and realistic understanding of the limits as to when and how the child should interact with the family dog.

As soon as the mother-to-be learns of her pregnancy, some thought should be given to preparing the dog for the inevitable changes. Dogs are likely to become anxious if the routine, environment, or the way the family interacts with the dog is changed or lacks predictability. Therefore gradual adjustments should be made before the baby arrives. Feeding, exercise, and play schedules, as well as sleeping and resting areas and any new routines or rules (e.g., rooms the dog is permitted to enter, furniture on which the dog is allowed to sleep, jumping up during greeting, barking at the window) will need to be put into place ahead of time to fit the family's situation once the baby is home.

If the family is consistent and predictable in their responses, the dog should quickly learn those behaviors that get rewards and those that do not. This is particularly important when giving attention. If the pet gets attention by nudging, head pressing, pawing, or licking, the family must stop rewarding these behaviors as they are not acceptable ways to get attention and could be problematic if the baby or child needs care or attention (e.g., carrying, changing, feeding). By consistently ignoring these behaviors and rewarding a desirable way of getting attention (e.g., a relaxed down) the dog should eventually cease the undesirable and offer the new calm behavior that gets the attention. The pet may initially be confused and frustrated and may escalate the behavior into more intense attention seeking that might include scratching, jumping up, barking, grabbing, or even biting. If the family even occasionally gives attention for these behaviors, they intermittently reward these more intense behaviors. Therefore, well before the baby arrives, the family should begin a program of structured interactions and predictable consequences (learn to earn), so that the pet learns that calm and settled behaviors are the way to get rewards. This effectively puts the rewards (affection, eating, treats) under the dog's control by consistently and predictably training that only calm responses (sit/watch, down/stay, lying on its mat) will be rewarded. To teach the dog what is desirable, food lures, a head halter (which can be left attached with a leash dragging), and obedience commands can be used or just waiting and watching until the desired behavior is displayed and then immediately rewarding (clicker training can be particularly effective). Also see our handout (12) on reward training. If the family is consistent and predictable the pet should soon learn that these calm behaviors are the way to get attention.

Commands (cues) should be given prior to the pet's behavior (sit, focus, down and settle, or go to a mat or crate) and rewards timed to follow immediately the behavior that is being trained. Other behaviors that are permitted now, but won't be permitted when the baby is at home, must also be addressed (e.g., jumping up, barking at windows, lying on furniture, climbing into the lap) by training and rewarding desirable alternatives (e.g., sit for all greetings, rest on your mat).

The dog might also be prepared for the homecoming by exposing it to the noises and smells of the new baby. If the dog gets upset when it hears strange sounds, a recording of baby noises (e.g., cooing, crying, screaming) can be used in a desensitization and counterconditioning program. The recording should first be played at sufficiently low volume that the dog shows no anxiety, while jovially requesting obedience commands for tasty food treats or some play time. Very gradually, the volume can be increased as the weeks go by until the pet seems comfortable with the noises at high volumes. A towel or blanket with the baby's scent can be taken home from the hospital to prepare the pet for the new smells that will arrive with the baby. The object should be presented while the dog is relaxed and taking treats or playing with a favored toy. Some dogs will be anxious when the parent is carrying or nursing the new baby. Testing the dog by carrying around and fussing with a doll

Continued

C.10 Infants, children, and dogs (client handout #17, printable version available online)—cont'd

(especially one that actually moves and makes crying sounds) can be useful. If there is any anxiety, a positive association should be made with this doll by giving the dog favored food rewards, affection, or a favored play toy whenever the doll is present.

When the baby comes home

If the dog has not seen the mother for a day or two, there will probably be a great deal of excited greeting behavior when she arrives with the baby. Therefore, if someone else carries the baby into the home, the mother can greet the dog without worrying that it might accidentally scratch the baby. It is important to set the dog up to succeed by anticipating problems and taking steps to prevent them. By taking this approach, scolding, punishment, and anxious feelings associated with the presence of the baby can be prevented.

The family should wait until the excitement has died down and the pet is calm before introducing the dog to the baby. That may be later in the same day or a few days afterward. The dog should be brought to meet when calm and under good control. Careful judgment must be exercised in deciding when to allow the dog close enough to sniff. If there is a chance the dog might jump, use a leash. If more control is needed, a head halter and leash can be utilized. If there is *any* chance that the dog might bite, consider using a lightweight basket muzzle (or avoid the situation entirely). If it can be predicted that a head halter or muzzle is likely to be utilized, it would be best for the family to accustom the dog to wearing these before the arrival of the baby. The family should *never* (no matter how sweet, trustworthy, or friendly the pet appears) allow an unsupervised dog around the baby.

It is especially important to be vigilant when the baby is crying, kicking, or waving its arms. This could cause a curious dog to jump up and injure the infant. During these times, it is wise to train a desirable response, such as a "Down-stay" away from the baby and give favored rewards, or have the dog go to its room, mat, or yard with a special chew toy. The family should immediately seek additional guidance from a qualified behaviorist if there are any suspicions that the pet is exhibiting predatory signs (stalking, strong focus, unusual interest) around the baby.

Whenever the dog is in the room with the baby, the family should remain positive with one family member focused on taking the dog across the room and rewarding acceptable behaviors (e.g., calm, responding to commands, orienting to the baby in a calm manner) with treats, food, play, or affection. With success, the exercises should gradually be moved closer to the baby. The idea is to promote relaxed behaviors and to make the dog look forward to the baby's presence by giving favored rewards each time the dog sees or hears the baby. This association can be made more dramatic by reducing the amount of attention or treats the dog gets when the baby is not around. In this way, the dog learns that the presence of the baby is associated with positive events, and the absence of the baby is not. The biggest mistake families make when they try to shape the dog's behavior is to concentrate on telling the dog what is wrong, instead of rewarding what is right.

As children grow up

As the baby continues to grow and mature, the dog will be exposed to a variety of new stimuli from crawling to toddling to walking, and even trying to approach or take things away from the dog. Even if the dog has adapted nicely to a particular stage in the child's life, the family must always be prepared for a change in the relationship between the child and pet. Interactions between dogs and young children should always be supervised. The spontaneous, active behavior of children is exciting for most dogs, and might elicit rough play, chase, or anxiety. Encouraging the child to give tasty food rewards to the pet for responding to "Sit" commands is a simple way to teach the pup to keep its paws on the ground and expect good things whenever it is around children.

An important thing to remember is that children are great imitators. Family members must not do anything to the pet that they do not want the child to do. This includes hugging, physical punishment, teasing, and rough play. Children don't know how to interact with animals, so they must be taught how to approach, handle, and play with the pet. For example, fetch is a great game for the child and dog to share. While some dogs will tolerate physical contact, the child will be safer if taught to avoid making contact around the eyes, ears, and head, and to pat the dog along its side. Hugging, getting face to face, and lifting are not well tolerated by some dogs and are best avoided. In fact, young children are more likely to be bitten on the face or head; boys in the age range of 5–9 are at highest risk, and most dog bites in young children are by the family dog, in contexts of resource guarding, or benign interactions such as hugging or petting. The dog should be physically confined away from the child (e.g., dog in crate or secure room, child in playpen, crib, or own room) so that an adult can supervise each approach and ensure that the dog is comfortable with the interaction. Be particularly careful about security and safety (and seek a behaviorist's guidance) if the dog ever growls, threatens, or shows active avoidance when it is sleeping, resting, or handled. Never punish or force affection on a dog that resists. This could lead to increased aggression or could suppress the growling behavior so that the pet no longer warns, but may still bite, when it wants to be left alone.

Children should have some degree of positive control over the pet and this can begin at a relatively early age. Once the child is talking, a family member can hold the child in the lap and teach the pet to sit when the child gives a command and drops a treat on the floor as a reward. This can be done by coaching the child to say the command word at the same time as the adult. Gradually, the adult can phase out the command and the child can give the command alone. This can also be done with other commands. When the child is old enough, it can be taught the same rule structure as the adults so that the dog consistently learns to lie down or sit calmly before giving it things that it wants (toys, treats, play). Nonaggressive pets can be taught to look forward to having the child present while they eat if an adult carries the child and has it toss small pieces of food in or near the bowl.

Children must also learn rules about other pets. The most important rule is that the child must *never* touch another family's pet or give it food unless an adult gives permission. Dogs on a leash, by food, by toys, sleeping, tied down, or running loose should never be approached. All family members must also follow these rules as a model for the child's behavior. Children must be taught to recognize and avoid potentially dangerous behaviors. The family should review aggressive postures (growling, loud barking, hair standing on end) and fearful behaviors (trembling, crouching, ears back, tail tucked) so that the child learns to avoid these animals. If the child is approached by a dog that is acting aggressively, the child should stand very still like a tree, say nothing, hold the arms against the body, and avoid eye contact. If the child is on the ground or knocked down, he or she should curl into a tight ball, cover the ears with his or her fists, and remain still and quiet until the animal moves far away. Some excellent references are available, such as dogscatskids.com, bluedog.com, doggonessafe.com, bowwowow.com, and growingupwithpets.com.

C.11 Infants, children, and cats (client handout #16, printable version available online)

How the cat responds to a new baby or child will depend upon previous experiences as well as the cat's genetic temperament. The most sensitive time for cats to begin learning positive social experiences is in the first 2 months of life, although ongoing positive exposures through to adolescence also play an important role. Some cats will adapt quickly to children and new babies by either ignoring them or eventually seeking them out for investigation or social contact (e.g., bunting or cheek rubbing), while others may immediately be inquisitive, playful, and affectionate. While investigation, seeking affection, and social contact may be desirable, these behaviors must be well supervised since they can still lead to injury to the child, or inappropriate responses from the child to the pet. Fortunately most fearful cats will avoid as long as they are not restrained and have sufficient opportunity to retreat to an area in which they feel safe and comfortable. However, cats that respond with aggression can be particularly dangerous.

There are three basic considerations for helping cats to adapt to new babies or children. The first is to adapt the cat's schedule, permitted behaviors, family interactions, and environment slowly so that it is prepared for the arrival. The second is for the family to supervise all interactions with the cat and the baby to ensure safety, and so that positive interactions can be rewarded. The third is to help the child adapt to the needs and tolerance of the cat so as to prevent the development of behavior problems.

Advanced preparation of the home

Many cats can become stressed and anxious when there are changes to their daily routine, social interactions, or environment. The cat's response may be a change in behavior or attitude with respect to humans or other cats (increased fear and avoidance, irritability, or aggression), urine or stool marking in the home, or displacement behaviors such as overgrooming and hair loss. There may also be an impact on the cat's physical health, such as a change in appetite (decreased or increased), activity level (increase or decrease), sleep-wake cycles, or even medical conditions with a stress-induced component (e.g., feline interstitial cystitis, a stress-related inflammatory disease of the bladder). The family should consider how the daily schedule, social interactions, and household will need to be changed when the new baby arrives and slowly begin to adapt the cat in advance of the new arrival. Whenever possible change should be made slowly and should be associated with positive events and interactions such as food, treats, affection, and play. For example, if the cat initiates play by chasing and play-attacking moving objects, the family should initiate and provide play sessions and play toys to meet the cat's needs. If there are rooms, counters, and areas of the house that will be out of bounds for the cat when the child arrives, then the family should begin in advance to keep the cat out of these areas, and teach the cat where it is allowed to sleep, play, and explore. It may also be advisable to set up any new furniture in advance of the baby's arrival, as some cats can be particularly sensitive or reactive to new structures and odors.

Some cats are anxious when they hear strange sounds. For these cats, a recording can be obtained of baby noises (e.g., cooing, crying, screaming). The recording should be played at a level that is low enough to cause no anxiety while tasty food treats, play, or catnip toys are offered. The volume should be gradually increased over several weeks until the cat seems comfortable with these noises at full volume. To prepare the pet for the new smells that will arrive with the baby, a towel or blanket with the baby's scent can be brought home from the hospital. The cat should then be taught to associate the object with favored rewards. On occasion, some cats may become anxious or overly investigative when a family member carries, changes, or nurses the new baby. Testing the cat by carrying around and fussing with a doll (especially one that actually moves and makes crying sounds) can be useful. A positive association should be made with this doll using favored play toys, treats, or food rewards before the baby arrives. If there is concern that additional safe control will be required to supervise and introduce the cat and baby, then training the cat to wear a body harness or giving it a separate room in which it can be housed comfortably can be extremely useful. In addition, using favored toys or treats, the cat can be trained to respond to a few positive commands (e.g., come, let's play, to your room), which could then aid the owners in engaging the cat in desirable behaviors at times when problems might arise.

When the baby arrives

The simplest rule to help with the arrival of the baby is for all interactions with the cat and the baby to be supervised and kept positive, while monitoring for potential problem behaviors (fearful or overly aggressive, affectionate, or playful). Any major problems should be addressed with the aid of a qualified behavior consultant. At all other times, such as when the baby is sleeping or playing in its playpen, access should be prevented. Even an affectionate cat could choose to lie down next to the young baby, and this might be particularly dangerous for babies that cannot yet raise their heads or turn over. When the cat and child are together, all appropriate interactions should be reinforced. It can be particularly helpful to identify all things positive to the cat (food, affection, play, catnip, treats) and provide them when the baby and cat are together, while reducing their availability when the baby is not around. If the cat reacts fearfully or unpredictably or there is a potential danger or risk to the new child, then access must be prevented and a body harness might be used to ensure future safe introductions. If there are any changes in the cat's general demeanor, health, activity level, feeding, drinking, and elimination, these are signs that should be immediately reported to the family veterinarian. Occasionally, Feliway or anxiolytic drugs combined with the behavioral program can help the cat to adapt.

As children grow up

As the child grows and becomes more mobile and interactive, the relationship between the cat and child may change. Fear and anxiety, as well as exuberant playful behavior, could become problematic. As always, supervision to assess the cat's response to the child and the child's interactions with the cat is the best way to ensure that desirable responses are rewarded and any undesirable responses are identified and the cat or child calmly removed from the situation. If problems do arise, preventing similar types of future interactions may be the safest plan, but a program of careful and entirely positive reintroduction might effectively improve the relationship.

As the baby continues to grow and mature, the cat will be exposed to a variety of new stimuli from the baby crawling to toddling to walking, and even trying to approach, grab, chase or take things away from the cat. Even if the cat has adapted nicely to a particular stage in the child's life, the family must always be prepared for a change in the relationship between the child and pet. Interactions between cats and young children should always be supervised. The spontaneous active behavior of children might be frightening for the cat or elicit unacceptable play behavior.

An important thing to remember is that children are great imitators. Family members must be good role models; they should not do anything to the pet that they do not want the child to do. This includes hugging, physical punishment, teasing, and rough play. Children don't know how to interact with animals, so they must be taught how to approach, handle, and play with the pet. While some cats will tolerate physical contact, the child will be safer if taught to avoid making contact around the eyes, ears, and head, and to stroke the cat along its side. Hugging, getting face to

Continued

C.11 Infants, children, and cats (client handout #16, printable version available online)—cont'd

face, and lifting are not well tolerated by some cats and are best avoided. On the other hand, be aware of what your cat likes and dislikes. If it enjoys being lightly scratched between its ears or stroked over the shoulders, these types of interactions might be a place for the child to start. However, if the cat might bite when petted, or when certain parts of the body are touched, these types of interactions must be avoided and the practicality and safety of keeping this type of cat in a home with children must be evaluated and rehoming may need to be considered.

Children must also learn rules about other pets. The most important rule is that the child must *never* touch another family's pet or give it food unless an adult gives permission. Cats running loose should never be approached. All family members must also follow these rules as a model for the child's behavior. Children must be taught to recognize and avoid potentially dangerous behaviors. The family should review aggressive postures (growling, hissing, hair standing on end) and fearful behaviors (trembling, crouching, ears back, tail tucked, attempts to escape) so that the child learns to avoid these animals.

Other resources include a DVD that teaches children to be safe with cats, *Dogs, Cats and Kids: Learning to be Safe with Animals* (dogscatskids.com), and the website www.growingupwithpets.com.

C.12 Aggression release (client form #1, printable version available online)

Name of animal: _____ Case #: _____

I certify that I am the owner of the above-mentioned animal and that I have sought behavioral counseling for my pet for advice on decreasing its aggressiveness.

I understand that aggression by animals can cause injury, including fatal injury, to other animals, to other people, and to me. I understand that treatment for aggressive behavior is not a guarantee that the aggression will be successfully controlled, and that it is impossible to ensure that my pet will not cause harm in the future.

I understand that the only way to ensure *absolutely* that my pet will never cause harm in the future is to euthanize it (end its life). I understand that if I do not euthanize my pet, it will be my responsibility to take appropriate precautions to prevent my pet from causing harm to others. These precautions may include, but are not limited to, informing persons near my pet of its tendency for aggressive behavior, keeping it on a leash, muzzling it, using a head collar, and/or keeping it restrained behind doors, gates, or fencing. I also understand that it is my responsibility to be aware of and comply with all relevant ordinances concerning aggressive animals, as well as any bylaws or acts that specifically apply to my pet. Finally, I understand that, should I choose not to euthanize my pet and it causes harm in the future, I may be held liable for such harm.

I hereby certify that I have read and understood the above and that I am signing this authorization with the full understanding that the treatment given my pet may not eliminate its aggressive behavior.

Signature of owner

Date

Printed name

Original release form courtesy of:
Sharon L. Crowell-Davis DVM PhD
Diplomate, American College of Veterinary Behaviorists
College of Veterinary Medicine
University of Georgia
Athens GA 30602

C.13 Counterconditioning to approaches at the food bowl (client handout #11, printable version available online)

The purpose of this exercise is to help your dog feel comfortable when you approach the food bowl. If your pet lunges aggressively when you are near the food bowl or if you do not feel completely comfortable doing this exercise, call a behavior consultant before beginning. Make sure your dog is completely relaxed before beginning.

Put your dog's food bowl down with the normal amount of kibble. Stand at a distance from the bowl at which your dog is completely relaxed and non-reactive (no sign of tense body posture, nervous glancing toward anyone nearby, hovering low over food and eating fast, lip lifting, growling, etc.)

Make sure that you have treats (meat, cheese, canned dog food) which are better than the dry food in your dog's bowl. Say your dog's name in an upbeat tone and then toss a treat into the bowl or next to it. Continue walking about beyond the safe distance, occasionally tossing food. As the pet becomes more relaxed and seems to anticipate and look forward to the tossed food, very gradually move a slight bit closer, and repeat.

Continue walking back and forth tossing food, as well as approaching from different directions, but be careful to never get close enough that the pet becomes less relaxed. Watch your dog's body language. If it is tense at all, walk away and begin the exercise on the following day, standing farther from the bowl.

Avoid any scolding or reprimands if the pet makes a mistake and growls. The sessions should be 100% fun, a game. The goal is to teach the pet to want to have someone nearby when it eats, not merely tolerate a person's presence.

C.14 Teaching structured interaction training (SIT) for all interactions (client handout #13, printable version available online)**Purpose of these exercises**

- Gain more control of the pet by consistently rewarding what is desirable
 - Reduce uncertainty and anxiety by being structured, predictable, and consistent so that your pet learns which behaviors get rewards
 - Train behaviors that are calm and relaxed which might then be extended to other situations where problems might arise
1. Teach the dog to sit on cue. Practice until it is sitting every time and in a variety of different locations.
 2. Ask your pet to sit before you give it anything it wants or needs (e.g., petting, play, feeding, going outside, getting on the furniture).
 3. Each time your dog approaches you and requests attention in an impolite way, such as pushing on your hand, pushing a toy at you, or leaning on you, ignore it for 5 seconds or more, then ask it to sit and reward it. Continue this until it automatically sits for attention. Then go to the next step.
 4. When your pet approaches you for attention or a reward, do not acknowledge it until it sits. This can be difficult but you must wait your dog out. If your dog sits, reward it. If any behaviors are exhibited except sit, simply ignore or walk away.
 5. Don't be concerned about ignoring your pet or walking away. You will soon have another chance to interact, since your dog is very likely to seek you out again shortly. If it offers a sit when you ignore it, praise it, reward it, with a treat or toy, or lavish it with attention. Your dog is getting it! Within a couple of days your dog should sit politely (sometimes referred to as "say please") for **all** attention (this might also be referred to as "saying please" for all interactions).
 6. Very gradually request longer sits and more relaxed postures. If your dog chooses to lie down for attention, this is also acceptable.
 7. Continue to reward your dog if it sits or lies down calmly for attention throughout its life.
 8. Maintain structure and predictability in all your interactions:
 - (a) Anytime you have something that your pet finds rewarding, ensure that your pet learns what response is expected before the reward is given.
 - (b) Before giving your dog its food, a feeding toy, or a chew toy, have it sit calmly or consider having it lie on a bed or mat next to its feeding area before giving the reward.
 - (c) Practice sit before you attach the pet's leash, before going out the door for a walk, and before crossing the street. You might even consider a sit-stay before your pet is allowed to follow you up or down the steps.
 - (d) Also practice consistency during walks. Do not walk ahead unless your dog maintains a small amount of slack on the leash. Have your dog stop or sit if it pulls ahead and only proceed if the leash remains slack. In short, the reward of walking forward is given only if the dog is not pulling.

C.15 Teaching “Leave it” (client handout #25, printable version available online)**Teach your dog to turn away from a treat**

1. Start with your dog sitting or lying down facing you.
2. Place a treat in your hand and make a fist.
3. Offer your fist, palm side up, to your dog with at least 30 cm (12 inches) of space between its muzzle and your fist. Do not move your hand towards your dog or say anything. Your dog might sniff, snort, lick, suck, and paw at your hand. Be patient.
4. As soon as your dog takes its nose away from your hand, even for a nanosecond, *immediately* open your hand, praise it, and let it eat the treat.
5. Repeat steps 2–4 until your dog no longer moves towards your fist as soon as you present it. This may take seconds, minutes, or several sessions, depending on your dog. When you present your fist and your dog sits still, backs away, or looks away, you are ready for the next step.

Add a verbal cue (command)

6. Say “Leave it” in an upbeat tone and immediately present your fist as before. If your dog does not move towards your fist, backs away, or turns away, *immediately* open your hand, praise, and let the dog eat the treat. If it sniffs or mouths, calmly withdraw your hand (do not jerk your hand away quickly), wait a few seconds, and try again. When your dog responds to “Leave it” correctly when you say it, you are ready for the next step.

Increasing the difficulty

7. Say “Leave it” and present your fist, then count to three. If your dog does not approach, turns away, or backs up, praise, open your hand, move it toward the dog, and let it eat the treat.
8. Repeat step 7 again and again until you have increased the amount of time that your dog waits for the treat to 5 seconds. Now that your dog has learned to respond to the cue “Leave it” by not touching your hand with its mouth for 5 seconds, it is ready for the next step.
9. Say “Leave it” and present a treat in your *open hand*, at least 30 cm (12 inches) away from its muzzle. If your dog does not try to get the food, praise it, and give it the treat. If it tries to get it, just close your hand. When it backs away, looks away, or turns away, repeat this step by again presenting your open hand with a treat in it while saying “Leave it.” When it backs away, looks away, or just doesn’t come forward, praise, move your hand towards it, and let it eat the treat.
10. Repeat step 9 until the dog will sit quietly for 5 seconds while you hold a treat in the palm of your hand. Now you are ready for step 11.

Generalization (making it work for other objects)

11. Place an object on the floor that your dog is not that interested in (e.g., heavy pot, book). Allow your dog to sniff it for a second, and then ask your dog to “Leave it.” When it does, praise and toss a treat about 30 cm (12 inches) away. Repeat this step again and again. Eventually, most dogs will lose interest in the item entirely and just sit and stare at the owner instead of going back to the item. When this happens, reward the dog for sitting and end the session.
12. Repeat step 11 many times with a wide variety of items. You might be able to move through multiple items in one session or you may only be able to get through one. Keep the value of the item low. For example, if your dog guards bones, don’t practice with those. You must get many successful repetitions in before you can practice with a high-value item. Practice “Leave it” throughout the day when your dog shows interest in something, even if it is something that it can have. Remember, you are just trying to get repetitions in so that you can practice. For example, if you are on a walk with your dog and it is sniffing the grass, tell the dog to “Leave it.” When the dog picks its head up, reward it. Then let it go back to sniffing. If it is carrying a toy in the house, ask it to “Leave it.” When it drops the toy, reward it and let it pick it back up. Continue in this way until the dog becomes very proficient at dropping things and lifting its head when it is sniffing things.
13. Finally, it is time to use “Leave it” with the items that cause your dog to react. Make sure that the treats that you have are better than what your dog has. Hold a toy that it has previously guarded, but can have (not a stolen item). Hold it in front of you and tell the dog to “Leave it.” Reward the dog if it hesitates, looks at you, or stops its forward movement. Toss the treat about 60 cm (2 feet) away and start over. Practice for 1–2 repetitions and then give the dog the item in its safe place. Do this once daily until the dog doesn’t go toward the item at all.
14. When the dog is proficient at this, start to put the item on the floor. When you tell the dog to “Leave it” as above and it does, toss the treat about 60 cm (2 feet) away and pick the item up. Then repeat the exercise. After two tries, give your dog the item in a safe place.
15. Practice, practice, practice!

C.16 Teaching “Watch” (client handout #26, printable version available online)

1. You may begin this exercise with your dog standing, sitting, or lying down in front of you. You may be standing or sitting.
2. Start with food in both hands. One hand (your dominant hand) should have one piece of food in it. The other hand should have multiple pieces. Your dominant hand should be at your side and your other hand behind your back. Say “Watch” as you bring the hand with the food up to your eyes. Your dog will most likely follow the food and look up at you. When it does, praise and hand a treat from your nondominant hand.
3. Repeat this exercise many times over several sessions. When your dog follows your hand each time, you are ready for the next step.
4. Practice the same way, except take the food out of your luring hand (the one which is moving). Continue to lure with your empty hand and reward from your other hand. In other words, you are practicing in the same way that you did in step 2, except your luring hand is empty. When this happens, praise and give the food reward. Some dogs will begin to look back and forth from the hand with the food to your face. Be silent and still. When your dog commits to looking at your face, praise enthusiastically and give the food reward. When your dog is successful at this step, you are ready for the next step.
5. Begin by luring your dog with your empty hand as you have been for 4 or 5 times, while saying “Watch.” On the sixth try, say “Watch” without moving your hand. If your dog looks at you, praise, reward, and end your session. If your dog doesn’t look at you, follow the instructions for dealing with this type of behavior in step 3.
6. Lure your dog once or twice and then say “Watch” without moving your hand. When your dog looks at you, praise and reward. Continue with the training session by saying “Watch” without moving your hands.
7. Begin by asking your dog to “Watch” without any hand movement. Remember to reward all successful attempts.
8. Continue as described above, slowly increasing the amount of time your dog has to look at you before receiving the reward during each training session until your dog can maintain eye contact with you for 10 seconds.
9. Say your dog’s name and “Watch” when your dog is turned away from you, but still within 50–100 cm (2 or 3 feet). When your dog looks at you, praise enthusiastically and reward generously. If your dog doesn’t look at you, get closer and use the food lure to get the dog to look at you. Repeat this step until you don’t have to lure the dog any more.
10. Begin to practice in different places in your home, outside, and in new places.

C.17 Teaching a dog to fetch and drop objects on command (client handout #7, printable version available online)

"Fetch" and "Drop it" are excellent commands to teach a young dog. Fetch is a great game that most dogs love. It is mentally stimulating, wonderful for wearing the pet out, an acceptable type of play for children and dogs, and can provide a means for social interaction between visitors and shy dogs. Teaching the pet to drop things on command reinforces the idea that the owner has control over the dog, and comes in handy when the pet has something in its mouth that it shouldn't.

Teaching fetch

Pick a time when the pet is in an energetic mood and there are few distractions. Toss an interesting toy a short distance. As the pet picks it up and turns to look at you, lower your body, take several quick steps in the opposite direction, wave your hand and wiggle your fingers in an animated way, and say "Fetch" in a very upbeat tone. This should catch the attention of the pet and prompt it to come toward you. Continue to repeat "Fetch" as the pet approaches.

If the pet runs the other way with the toy, lies down and chews it, or does not come all the way up to you, simply walk away and end the play session. You must avoid chasing after the pet, walking toward it to take the toy, or attempting to coax the pet to return.

Drop it – first step

The first step involves luring the pet to drop the toy and teaching a cue word. As the pet approaches with the toy, place a piece of food between your forefinger and thumb. When the pet reaches you, move your hand and the food toward the pet's mouth with a bit of a flourish. Hold the food in front of the mouth without saying anything. When the pet opens its mouth to take the food, the toy will fall out. As this is happening, say the cue words, "Drop it," and pick up the toy with the other hand as you allow the pet to take the food.

Repeat until you notice that the pet is starting to drop the toy as your hand just begins the downward movement toward it.

Use a small piece of food that is more interesting than the toy, but not so interesting that the pet will forget the toy and only focus on the food. Each time the pet takes the food from your hand, say "Good dog." If the pet is not interested in food, you can use a second toy in place of food to lure it to drop the fetched toy.

Drop it – second step

The next step is to turn the cue words into a command. Instead of putting the food in front of the pet's mouth and waiting until it opens to say "Drop it," say "Drop it" as you begin to swing your hand down toward the pet. Pick up the toy, give the food, and say "Good dog." Repeat this at least 12 times before advancing to the next step.

Drop it – third step

The last step involves gradually phasing out the food. Hold your empty hand like you have food in it, swing it down toward the pet, and say "Drop it." When the pet drops it, say "Good dog" and give it loads of praise. As you continue to practice, alternate between a food reward and praise, but vary the ratio of praise rewards to food rewards so the pet doesn't know exactly which reward it will get each time it drops the toy. As the training progresses, you should be using more praise and less food. When combining the drop and fetch exercises, your dog may also learn that by dropping the toy, it gets the opportunity to chase and fetch it again. End the session on a positive note with your dog dropping the toy and getting a final reward.

Give it

If you prefer to have a "Give" command, you would proceed exactly as with "Drop it," but in each case you would place your second hand under or on the toy and reward the dog when the toy is released into your hand.

Having problems?

If the dog will not drop the toy, you can first increase the value of the lure while using a toy to fetch that is of less interest to the dog.

Another method for teaching drop is to watch the puppy closely without interacting any further until it eventually drops the toy or object it is carrying. As soon as the toy is dropped, say "Drop it" and call the pet over for a high-level reward. The use of clicker training can be particularly effective to mark and capture the "drop" behavior. After a few sessions try and anticipate when the pet is about to drop the toy, say "Drop" just in advance and reward immediately with "Good drop" or a click and food reward.

Drop it – other items

Once the pet learns the "Drop it" command during play, the command can be used whenever it has anything in its mouth. The transition from dropping toys during fetch to dropping more desirable items, like raw hide or food wrappers, should be made very gradually. Rank the pet's toys from the least desirable to most desirable.

When you notice that the pet has the least desirable toy in its mouth, ask it to drop it using a command and hand signal. Praise it or give a small food reward, then ask it to sit and return the toy to the pet. When you find that it drops that toy readily, move to the next toy in the rank, and so forth. Be sure always to use an upbeat tone of voice and make the training fun. Practice is very important. The pet needs to drop something on command at least several times each day if you expect to be able to get to the point where it will drop special items like food wrappers and dead birds on command.

C.18 Feline housesoiling therapy worksheet (form #8, printable version available online)

Consultation: Housecall / Office / Phone

Owner: _____ Pet: _____ Date: _____

Medical

_____ Medical health _____

_____ Lab tests _____

_____ Medication / Feliway _____

General

_____ Reduce anxiety/conflict stress _____ Keep a diary

_____ Avoid punishment (no hitting, yell) _____ Interrupt in act _____ Take or follow to litter and reward

_____ Remove odor _____ Identify soiling cat _____

_____ Environmental enrichment _____ Reward train _____ Play enrich _____ Avoid stressors _____ 3D space

Supervision/confinement

_____ Length of time: _____ weeks Area of house: _____ Cage _____

_____ Bell on the cat to aid supervision _____ Harness on cat to aid supervision

_____ Prevent access to soiled areas or objects _____ Prevent access to stimuli that trigger housesoiling

Safeguard previously soiled areas

Change the function of areas:

_____ Food bowls _____ Bedding _____ Play area _____ Scratching post

Alter desirability of areas:

_____ Double-stick tape _____ Citrus product / deodorant _____ Cologne/perfume

_____ Home-made booby traps _____ Motion-activated alarm _____ Motion-activated spray

_____ Cat repellents _____ Moth balls

_____ Cover furniture or floors with: _____ upside-down vinyl carpet runner _____ plastic _____ foil _____

_____ Fill bathtub _____ sink _____ other _____ with water, ping pong balls

_____ Double-sided tape _____ Other: _____

Prevent access to area

_____ Close off frequently soiled rooms _____ Take up rugs _____ Move furniture

Litterbox

_____ Clean frequently _____ Self-cleaning litterbox

_____ Increase number to _____ boxes _____ Change locations _____ More locations

_____ Use empty litterbox or food tray _____ Use litter on only one side of litterbox

_____ Offer litter: _____ clumping _____ sand _____ dirt _____ paper _____ sawdust _____ cedar _____ carpet _____ clay _____ peat moss / leaves

_____ wheat _____ brand of litter _____ Litter attractants

_____ Offer different boxes: _____ covered _____ uncovered _____ low sides _____ higher sides _____ larger

C.18 Feline housesoiling therapy worksheet (client form #8, printable version available online)—cont'd**Miscellaneous**

_____ Prevent access to stimuli _____ Remove strays _____ Block visual sites _____ Booby trap sites

_____ Discourage visiting animals (_____ sprinkler _____ spray device _____ repellent / odor _____ odor removal)

_____ When stressful situations are anticipated: _____ confine _____ supervise _____ increase playtime

Assessment

Initiating factors _____

Maintaining factors _____

Diagnosis/prognosis

C.19 Basket muzzle conditioning (client handout #27, printable version available online)

1. Start by sitting in a chair and ask your dog to sit in front of you. Do not bend down, over, or toward the dog.
2. Smear the inside of the basket muzzle with a small amount of dog food, cheese spread, meat spread, squeeze cheese, or peanut butter. Hold the muzzle and let the dog lick it out.
3. When your dog has licked the muzzle clean, put more treats in and continue. When your dog is pushing its nose into the muzzle immediately to get the food, go to the next step.
4. Allow the pet to lick food out of the muzzle. While your dog is licking the food out, gently put the straps around the head and hold them there for less than 3 seconds while your dog eats. If your dog backs away, pull the muzzle toward you slightly and offer it again. Do not push the muzzle toward your dog.
5. Over multiple sessions, slowly increase the amount of time that you hold the straps and slowly progress to buckling and securing the muzzle.
6. Once you can buckle the muzzle, continue to feed your dog by pushing food through the openings of the muzzle for a few more seconds, then remove it.
7. Over the course of many sessions, gradually increase the time that your dog is wearing the muzzle.
8. The goal is for your dog to wear it for 10–15 minutes at home before you use it in stressful situations.

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Appendix C

This appendix contains the printed versions of forms that are available online but are not otherwise found as tables/boxes/forms within the chapter text.

Form/handout	Title	Page
C.1	Pet selection consultation questionnaire and resource list (client form #13, printable version available online)	
C.2	Socialization tips for puppy owners (client handout #3, printable version available online)	
C.3	Socialization tips for kitten owners (client handout #18, printable version available online)	
C.4	Training basic commands (cues) (client handout #2, printable version available online)	
C.5	Behavior consultation questionnaire (client form #3, printable version available online)	
C.6	Puppy play biting (client handout #20, printable version available online)	
C.7	Behavior observation and evaluation form (client form #15, printable version available online)	
C.8	Behavior consultation follow-up (client form #9, printable version available online)	
C.9	Informed consent for behavior-modifying drug use (client form #5, printable version available online)	
C.10	Infants, children, and dogs (client handout #17, printable version available online)	
C.11	Infants, children, and cats (client handout #16, printable version available online)	
C.12	Aggression release (client form #1, printable version available online)	
C.13	Counterconditioning to approaches at the food bowl (client handout #11, printable version available online)	
C.14	Teaching structured interactive training (SIT) for all interactions (client handout #13, printable version available online)	
C.15	Teaching "Leave it" (client handout #25, printable version available online)	
C.16	Teaching "Watch" (client handout #26, printable version available online)	
C.17	Teaching the pet to fetch and drop objects on command (client handout #7, printable version available online)	
C.18	Feline housesoiling therapy worksheet (client form #8, printable version available online)	
C.19	Basket muzzle conditioning (client handout #27, printable version available online)	

C.1 Pet selection consultation questionnaire and resource list (client form #13, printable version available online)

Pets are for life. Finding the best match for your home and family is not a science but there is a lot you can do to improve the chances of finding that perfect pet. While a large part of your pet's behavior will be shaped by your care and training (nurture), there is also a lot that might be genetically programmed or ingrained before you ever get your pet (nature).

The goal of a selection consultation is to help you choose a pet that is suited to your family, and to provide guidance to prepare you for your pet's arrival. If you are interested in a purebred, we ask that you first narrow your selection to a few breeds that appeal to you, since there are literally over 1000 dog breeds (recognized or unrecognized, depending on which registry you favor). Once you decide on these preferences, we can then discuss the pros and cons of each breed for your home.

To get some idea as to the size, shape, color, coat type, and other physical characteristics of each breed, you might want to begin by visiting a dog or cat show and interviewing some of the breeders. There are also numerous websites, some of which are listed below, that will help guide you through the selection process, even helping to prioritize breed traits. In addition, check with the kennel clubs, breed associations, breeder directories, and veterinary organizations in your country, state, or province.

On the internet, you can research the physical characteristics of the breed, but also the history of how, when, and why the breed was originally developed. This can give you excellent insight into the behavioral traits of the breed. However, some information on the web can be weighted for or against the breed depending on the writer's background and perspective. Therefore consider both the information and the source when evaluating the information and work with your veterinarian or a behaviorist to weigh the evidence when it seems conflicting. It is also important to consider health and behavior issues that are commonly seen in the breed when selecting the breed and lineage. See the references below and ask your veterinarian for information.

If you would rather adopt a dog or cat that is in need of a home, consider local humane societies, shelters, or rescue groups. Many of these organizations have excellent web resources both nationally and locally to help you find and select stray, abandoned, and relinquished pets. These organizations usually have a relatively large number of purebred dogs and cats available for adoption (e.g. www.petfinder.com, www.americanhumane.org, www.bestfriends.org, www.humanesociety.org).

Various factors should be considered in the adoption decision, including breed, age at adoption, the differences between males and females, as well as where to obtain the pet and what to look for when choosing the pet. Puppy and kitten assessment tests are not a very good way of predicting adult behavior, especially in puppies less than 4 months and kittens less than 3 months, although pets that already display overly fearful behavior at this age should be a cause for concern. As puppies and kittens mature, testing may become increasingly more accurate. Yet, many behavior problems, even those with a genetic component, may not begin to emerge until sexual maturity (6–9 months) or even behavioral maturity (1.5–3 years). Therefore you might learn a lot more by assessing the behavior of the parents if they happen to be accessible.

Finally there are many changes that can occur from the time you bring a new pet home as the pet develops and matures. Environment experience, socialization, and how you interact with and train your pet are critical influences that interact with the genetics of the pet. During the selection consultation you will get both medical and behavioral advice to get you off to a good start, providing for the needs of your pet, teaching your pet what is desirable, and preventing behaviors that might be undesirable.

Date of consult

Name:

email:

Address:

City/town:

Province/state:

Postal/zip code:

Phone:

Home

Business

Fax:

C.1 Pet selection consultation questionnaire and resource list (client form #13, printable version available online)—cont'd

1. Indicate all family members in the household, including age and sex:

2. Indicate any other pets in your household and their age and sex:

3. Desired pet: ☐ Dog ☐ Cat
Breeds of interest: list up to 5

4. If you have no specific breeds in mind, list size, traits, and coat color and type that interest you:

5. For what reasons are you interested in obtaining a pet (choose one or more)?

- ☐ Companionship
- ☐ Guarding/protection
- ☐ Show/breeding
- ☐ For the kids
- ☐ Sport/competition – agility / flyball – if yes, explain

☐ Work – hunting, herding – if yes, explain

☐ Other – if yes, explain

6. Have you ever owned a pet previously? Y/N

If yes, describe the pet(s) and when owned:

7. Special needs:

Does any family member have allergies to pets? Y/N If so, what pets and severity?

Are there any special considerations about your home that might need to be considered (e.g., physical disabilities, illness, infirmities, borders)?

C.1 Pet selection consultation questionnaire and resource list (client form #13, printable version available online)—cont'd

Are there any restrictions on pet ownership in your home or building? Describe:

8. Household (check one or more that apply)

Describe the type of home you live in:

- ☐ Single family detached – indicate approximate size:
- ☐ Town home or semidetached – indicate approximate size:
- ☐ High-rise/apartment – indicate approximate size:
- ☐ Basement flat/room – indicate approximate size:
- ☐ Owned ☐ Rental
- ☐ Fenced private yard – indicate approximate size:
- ☐ Unfenced yard – indicate approximate size:
- ☐ No yard ☐ Shared yard
- ☐ Nearby park(s) ☐ Nearby dog park
- ☐ Busy street ☐ Quiet street ☐ Rural
- ☐ Other

9. Daily schedule/home environment

Indicate your basic family schedule, including how long the pet will be left alone at any one time during the average work or school day.

What is the longest time your pet will need to be left alone?

Where do you intend to house your pet when you are out of the home?

Where do you plan for your pet to sleep at night?

Will you be using a pen or crate confinement/training? Y/N If yes, describe:

10. Financial (choose one)

- ☐ I have significant concerns about the cost of pet ownership as I will need to watch my expenses
- ☐ I have mild concerns about the expenses of owning a pet
- ☐ I have no concerns about the cost of owning a pet

C.1 Pet selection consultation questionnaire and resource list (client form #13, printable version available online)—cont'd

Below is a list of financial obligations that responsible pet ownership might entail:

a) Regular expenses

Food, treats, toys, license, cleaning supplies, grooming supplies, grooming, day care, dog walker
Healthcare; regular veterinary examination – vaccines, fecal, laboratory screening tests, parasite protection, dentistry, insurance, geriatric care, laboratory tests

b) One-time or infrequent

Purchases: pet, bowls, leash, collar, identification (e.g., microchip, name tag), cage
Healthcare: spay/castrate, puppy/kitten class, adult obedience

c) Occasional recurrent expenses

Boarding, medical care for sickness, illness, emergency

Pet selection references

Examples of useful internet sites:

akc.org, ckc.ca, www.thekennelclub.org.uk, avma.org, ovma.org, cfainc.org, www.cca-afc.com, dogs-in-canada.com, www.ankc.org.au, dogbreeds.net, www.dogadvisorycouncil.com/puppy

Breed catalogs (see dogwise.com, amazon.com)

There are numerous publications in this category. Here are a few suggestions;
Fogle B. Eyewitness companions: cats. Dorling Kindersley, New York, 2006
Fogle B. Eyewitness companions: dogs. Dorling Kindersley, New York, 2006
Iams cat breed guide: <http://www.iams.com/cat-breeds/breedguideindex.aspx>
Iams dog breed guide: <http://www.iams.com/dog-breeds/breedguideindex.aspx>
Morris D. Dogs: the ultimate dictionary of 1000 breeds. Trafalgar Square, London, 2008

Other resources

Ackerman L. The contented canine: pet parenting for dog owners. ASJA Press, New York, 2001
Ackerman L. The genetic connection: a guide to health problems in purebred dogs, 2nd edn. AAHA Press, Lakewood, CO, 2011
Advisory Council on the Welfare Issues of Dog Breeding <http://www.dogadvisorycouncil.com/puppy>
Alterdon D. The cat selector, how to choose the right cat for you. Barron's, Hauppauge, NY, 2011
Alderton D. The dog selector, how to choose the right dog for you. Barron's, Hauppauge, NY, 2010
Benjamin CL. The chosen puppy: how to select and raise a great puppy from an animal shelter. Howell Book House, New York, 1990
Coren S. Why we love the dogs we do: how to find the dog that matches your personality. Firefly Books, Richmond, Ontario, 2000
Fogel B, White PH. New dog: choosing wisely and insuring happily ever after. Firefly Books, Richmond, Ontario, 2008
Hart BL, Hart LA. The perfect puppy. WH Freeman, New York, 1988
Kilcommons B, Wilson S. Paws to consider. Choosing the right dog for you and your family. Warner Books, New York, 1999
Lowell M. Your purebred kitten – a buyer's guide. Henry Holt, New York, 1995
Peterson C. Please oh please can we get a dog? Parents' guide to dog ownership. Howell Book House, New York, 2004
Sternberg S. Successful dog adoption. Howell Book House, New York, 2003

C.1 Pet selection consultation questionnaire and resource list (client form #13, printable version available online)—cont'd

Some breed selector tools on the internet

Organization	web site
5-Star Dog	http://www.5stardog.com/dog-breed-selector.aspx
Animal Planet: cats	http://animal.discovery.com/breedselector/catselectorindex.do
Animal Planet: dogs	http://animal.discovery.com/breedselector/dogselectorindex.do
Breeder Retriever	http://www.breederretriever.com/breedselector.php
Dog Breed Info	http://www.dogbreedinfo.com/search.htm
Dog Time Matchup	http://dogtime.com/matchup/start
Eukanuba Dog Breed match	http://www.eukanuba.com/en-US/dog-breed-selector.jsp
Good Housekeeping	http://www.goodhousekeeping.com/family/pets/dog-breed-quiz
Pedigree breed selection	http://www.pedigree.com.au/select/
Pet Care Information and Advisory Service	http://www.petnet.com.au/selectapet/choose-a-pet
Puppyfinder	http://www.puppyfinder.com/breedselector.php
Purina cat breed selector	http://www.purina.com/cat/breed-selector/default.aspx
Purina dog breed selector	http://www.purina.com/dog/breed-selector/default.aspx
Select Smart	http://www.selectsmart.com/DOG/

C.2 Socialization tips for puppy owners (client handout #3, printable version available online)

Even though dogs have been domesticated for thousands of years, each new puppy that comes into our world must learn about humans. Socialization is the process during which puppies develop positive relationships with other living beings. The most sensitive period for successful socialization is during the first 2–4 months of life. The experiences the pet has during this time will have a major influence on its developing personality and how well it gets along with people and other animals when it grows into adulthood. It is very important for puppies to have frequent, positive social experiences during these early months in order to prevent asocial behavior, fear, and biting. Puppies that are inadequately socialized may develop irreversible fears, leading to timidity or aggression. This is not to say that socialization is complete by 4 months of age; only that it should begin before that time. Continued exposure to a variety of people and other animals, as the pet grows and develops, is also an essential part of maintaining good social skills. It is also extremely important that your new puppy be exposed to new environments and stimuli at this time (e.g., sounds, odors, locations, sights, surfaces) to reduce the fear of the unfamiliar that might otherwise develop as the pet grows older.

Puppy socialization – what to do

It is essential that every puppy meets as many new people as possible (including babies, children, adults, and seniors), in a wide variety of situations, but be careful not to overwhelm it. Begin with calm introductions to one or two people at a time. If the pet handles this well, then more people, increased noise, and more activity can be added. It can be beneficial to ask each person who meets the puppy to give it a small piece of kibble or a tiny treat. This will teach the puppy to look forward to meeting people. It will also discourage handshyness, since the puppy will learn to associate new people and an outstretched hand with something positive.

Once the puppy has learned to sit on command, have each new friend ask it to sit before giving the treat. This teaches a proper greeting and will make the puppy less likely to jump up on people. You should make certain that the puppy has the opportunity to meet and receive biscuits from a wide variety of people, especially people who differ from those in the family home. In the case of puppy socialization, variety is definitely the spice of life. The fear that might arise from the way a person looks, acts, sounds, moves, or perhaps even smells might be prevented by exposure during the socialization period. In particular, every effort must be made to see that the young pup has plenty of opportunities to learn about children. They can seem like a completely different species to dogs since they walk, act, and talk much differently than adults. Running, screaming, bicycles, roller blades and skateboards are also some of the varied stimuli that might be more common when children are around. Puppies that grow up without meeting children when they are young may never feel comfortable around them when they become adults. In addition, if there is the possibility that you might want your pet one day to be a service or visitation dog, there are number of other sights, sounds, smells, actions, and interactions to which your dog should be exposed. These might riding on elevators, the sounds of hospital equipment, wheelchairs or the patient in a nursing home with a cane, walker, oxygen tank, or iv pole. Lack of experience with a wide variety of people during puppyhood is a common cause of social fear, avoidance, and biting.

Take the pup to visit friends' homes to interact with them and with their pets. The ideal home is one with calm children and calm pets that don't go out to parks or other areas where they might pick up diseases that could be spread to your puppy, and where the pets have received appropriate immunizations and parasite control. As soon as your veterinarian determines that your puppy is adequately vaccinated, take it on as many walks and outings as possible. Just be careful to avoid areas where stray dogs roam that might carry diseases.

Puppy classes

Attending puppy classes during the primary socialization period (which begins to wane by 12–14 weeks of age) is another excellent way of ensuring multiple contacts with a variety of people and other dogs. This relatively new concept in training involves enrolling puppies early, before they pick up bad habits, and at an age when they learn very quickly. Puppy training and socialization classes are now available in many communities where, with the proper healthcare precautions, puppies can be admitted as early as 8–10 weeks of age. These classes can help puppies get off to a great start with training, and offer an excellent opportunity for important social experiences with other puppies and a wide variety of people. Since there can be some health risks when exposing young puppies to other dogs and new environments, the best age to start your puppy in classes, and the best classes in your area, should be discussed with the family veterinarian. For further guidelines on puppy socialization and puppy classes, visit the American Society of Veterinary Behavior website at avsabonline.org.

C.2 Socialization tips for puppy owners (client handout #3, printable version available online)—cont'd

Avoid unpleasant experiences

A young puppy's interactions should always be supervised to ensure nothing happens that might make it afraid of people. Go slow with socialization exposure, and if the pet ever seems anxious, take some time out and then re-expose it to people in slightly calmer situations.

In addition, avoid all physical punishment. Harsh scolding or punishing a young pet will damage its bond with you and weaken its trust in people. Techniques such as swatting the pup, shaking it by the scruff, rubbing its face in a mess, and roughly forcing it onto its back should never be used. Pets that are raised using these methods may grow up to fear the human hand, and are more likely to display avoidance or become fear biters. In general, any interactions with people that might make a puppy anxious should be avoided, particularly during the early months of its life.

Socializing takes time and patience, but the benefits are worthwhile, so be sure not to miss the opportunity to guide your pup through this important process. Proper socialization will help ensure that your pet grows up to be social, friendly, and well adjusted.

Best wishes for a long and happy relationship!

C.3 Socialization tips for kitten owners (client handout #18, printable version available online)

Even though cats have been domesticated for thousands of years, each new kitten that comes into our world must learn about humans. Socialization is the process during which kittens develop positive relationships with other living beings. The most sensitive period for successful socialization is during the first 3 months of life, especially from 3 to 9 weeks of age. The experiences the pet has during this time will have a major influence on its developing personality and how well it gets along with people and other animals when it grows into adulthood. It is very important for kittens to have frequent, positive social experiences during these early months in order to prevent asocial behavior, fear, and biting. Kittens that are inadequately socialized may develop irreversible fears, leading to timidity or aggression. This is not to say that socialization is complete by 3 months of age; only that it should begin before that time. Continued exposure to a variety of people and other animals, as the pet grows and develops, is an essential part of maintaining good social skills. It is also extremely important that the kitten be exposed to new environments and stimuli at this time (e.g., sounds, odors, locations, sights, and textures) to reduce fear of the unfamiliar that might otherwise develop as the pet grows and ages.

Kitten socialization

It is essential that every kitten meets as many different types of people as possible in a wide variety of situations, but be careful not to overwhelm it. Begin with calm introductions to one or two people at a time. If the pet handles this well, then add more people, increased noise, and a variety of activities. It can be beneficial to ask each person who meets the kitten to give it a small piece of food or a tiny treat. This will teach the kitten to look forward to meeting people. It will also discourage handshyness, since the kitten will learn to associate new people and an outstretched hand with something positive. Kittens that are wary of taking food or physical contact from strangers may be enticed if the treat is tossed to the kitten or if the visitor is given a play toy to engage the kitten in a game of chase.

In particular, it is essential to ensure that the young kitten has plenty of opportunities to learn about children. They can seem like a completely different species to the young kitten since they walk, act, and talk much differently than adults. Kittens that grow up without meeting children when they are young may never feel comfortable around them when they become adults. Similarly, since different people can act, look, sound, or even smell different, the more variety in the kitten's life, the better. Lack of experience with a wide variety of people, especially young children, is a common cause of social fear, avoidance, and biting.

You should also take your kitten to visit friends' homes to interact with them and with their pets. The ideal home is one with calm children and calm pets that don't go out to areas where they might pick up disease organisms that might be passed to your kitten and where the pets in the home have had relevant vaccinations and appropriate parasite control.

Avoid unpleasant experiences

The young kitten's interactions should always be supervised to ensure nothing happens that might make it afraid of people. Go slow with socialization exposure, and if the pet ever seems anxious, take some time out and then re-expose it to people in slightly calmer situations.

In addition, be careful to avoid physical punishment or any other interactions with people or experiences in new environments that might make the kitten anxious. Harshly scolding or punishing a young pet will damage its bond with you and weaken its trust in people. Techniques such as swatting the kitten, tapping its nose, shaking it by the scruff, or rubbing its face in a mess should never be used. Pets that are raised using these methods may grow up to fear the human hand, and are likely candidates to become fear biters. In general, any interactions with people that might make a kitten anxious should be avoided, particularly during the early months of its life.

Kitten socialization classes

Although kitten socialization classes are not as popular as puppy classes, consider enrolling your kitten in one of these classes if they are available in your area. They are an excellent way to ensure multiple contacts with a variety of people and other cats and to learn more about the care, handling, and training of kittens.

Socializing takes time and patience, but the benefits are well worthwhile, so be sure not to miss the opportunity to guide your kitten through this important process. Proper socialization will help ensure that your pet grows up to be social, friendly, and well adjusted.

Best wishes for a long and happy relationship!

C.4 Training basic commands (cues) (client handout #2, printable version available online)

Introduction

Obedience training is important for all dogs. The best way to get the job done is to start early in the pet's life, use positive reinforcement, and avoid punishment. This will help ensure quick learning and make the training process fun. If you begin the pet's training when it is a puppy, you'll find that early training, well-timed rewards, repetition and consistency can help establish control, socialize your pet, prevent undesirable behaviors, and control unruly behaviors.

Food Lure Training

An easy, nonforce method for teaching obedience commands involves the use of small bits of food for training lures and reinforcements. Most dogs are very motivated to take food, so the best choice for a food lure is the pet's own dry food. If this is not sufficiently appealing, try small morsels of semimoist dog treats or freeze-dried chicken or liver. An excellent time to train the picky pet is just prior to its dinner time, since the dog should be hungry, more focused on the food, and quicker to respond. On the other hand, a dog that gets very excited around food should be trained after dinner.

You can use the food to lure the pet into the response you want as you give the command, and then the food will be given as a reward immediately following the response. One of the advantages of food lure training is that your pet will learn two cues for each command (visual and auditory). As soon as your pet is responding to the food lure, begin to hide the food in your hand (or keep the food in your other hand) while you use the hand signal and verbal commands to cue the behavior and continue to give the rewards for success. Learning a double signal (auditory, visual) will make the pet twice as likely to respond to you. Once a behavior is learned, food rewards should be used intermittently, and only for longer, calmer, or more accurate behavior. You'll do this by picking only the best responses (e.g., best position, quickest response) to reward, and withholding food rewards for less exact responses during subsequent training sessions.

To help ensure that the pet learns with a minimum number of mistakes, avoid training when it seems overly energetic or has a shorter attention span. Work in a quiet area, keep the training sessions short, and stop before the dog begins ignoring commands. When the pet's response to commands becomes dependable, you can gradually take the training to environments with increasingly stronger distractions. Be patient, take your time, and make sure the pet knows one command well before proceeding to the next.

Your tone of voice is important. Use a happy tone of voice when teaching, "Come," "Sit," and "Down." An upbeat tone will help motivate the pet to move. Use a deep, commanding but calm tone is more likely to cause the pet to hold its place when teaching "Stay." You should avoid repeating a command over and over without getting a correct response. If you do this frequently, the pet will learn that it does not have to obey the first time you ask. Right before you give a food reward, always say "Good dog." The pet will learn to associate the words with food and the words will eventually become a valuable secondary reinforcer to sustain the response as the food is gradually withdrawn.

Recall on command

This is a fairly straightforward command to teach. Say the dog's name so it turns and makes eye contact with you. Extend your hand toward the pet with a piece of food in it. Wave your hand with the food towards you and say, "Come" as the pet runs to you. Say "good dog" as you begin to give the food. Take a few steps back. Show the pet a second piece of food, say its name, and repeat the recall for food. The pet will learn two cues to come on command, a verbal cue and a visual cue. An alternate way to teach the recall is to toss a piece of food for the pet to chase. After it picks it up, say "Come" and wave your hand towards you. When the pet runs up to you, ask it to sit, say "Good dog" and give a piece of food. Gradually phase out the food reward.

Sit on command

With the pet in a standing position, hold a small piece of food in front of its nose. In a steady, slow motion, move the food over the dog's head. The pet's nose will point up and the rear end will ease down to the floor, taking it into the sit position. Say, "Sit" as the rear hits the floor and give the food. Avoid holding the food lure too high over the head or the pet will jump up instead of sit. It won't be long before you'll notice that the dog will go into the sit position when you sweep your hand in an upward movement, even without food. As soon as the pet learns this command, you should ask it to sit before it gets anything it wants. If you are consistent with all your rewards, your dog will learn that to get what it wants, it needs to do the behavior that you want it to learn. (see structured interaction handout – SIT (handout 13))

C.4 Training basic commands using food lure training (client handout #2, printable version available online)—cont'd

Down on command

Begin this lesson with the dog sitting on a smooth surface. Quickly move a piece of food downward from in front of its nose to the floor directly next to its front paws. As the front end of your pet slides down to the floor, say "Down" and give the food. You must make sure that you keep the food on the floor close to the pet's paws. Otherwise it is likely to stand up and walk toward the food lure. Eventually, a downward sweep of your hand by itself will cause the dog to go into the down position. This command may take a little more patience and time than the first two. Only use the word "Down" when you are teaching this command. If you use the same word to tell the pet to get down off counters and furniture, or when jumping on people, it may be confused about its meaning.

Stay on command

The "Stay" command is probably the most challenging command to teach a young dog. Don't attempt to teach this command unless the pet is calm and you can get it to focus on you. A helpful strategy is to calm the dog down with a long walk or play session just prior to training.

Ask the pet to "Sit" without using a food lure. The second the pup sits, lean toward it, look it in the eye in an assertive manner, extend the palm of your hand toward it, and say "Stay" in a firm not angry tone. Wait only 1 second, then calmly praise it while the pet is still sitting, give a release command, "OK," and hand it a small food reward. Repeat the command, adding a second to the stay following every five or more repetitions. Once the pet can stay for at least 20 seconds, you can begin working on distance. Ask the pet to "Stay," and take one step away from it. Gradually work from a 1-second to a 20-second stay at this position, then move back two steps and repeat the process. In no time at all, you will have the pet staying for longer periods at longer distances.

Common causes of failure to teach the "Stay" command include attempting to make the dog stay too long or at too far a distance too quickly, as well as attempting to get the response when the pet is too active or distracted. Try to anticipate when the pet will become bored with training and stop well before then. If the pet's eyes start to wander or it seems like it might move too early, calmly repeat "Stay" in a serious tone of voice, make strong eye contact, and lean toward it. Maintain the stay for just a few more seconds, and then reward and release the pet.

Heel on lead

The goal is to teach the pet to walk without pulling on a slack leash. Before training, try to tire out the pet out with some aerobic play. The initial training should be short and held inside without distractions. Later, training can be moved to the yard, and then to sidewalks. If the pet is incorrigible about pulling, use a head halter or front control halter for more control.

To get a young puppy used to its leash, put the leash on the pet and hold it loosely. Toss tiny treats on the floor one at a time ahead of the pup. Lightly hold the lead as the pup moves forward to eat each piece. Gradually apply a bit more tension on the lead. Repeat outdoors on the patio, deck, and in the yard.

Begin the heeling session by asking the pet to "Sit." Stand on the pet's right side, facing the same direction. Take the leash in your left hand, holding it about 500 cm (2 feet) from the pet. Show the pet a treat or toy held in the right hand. Say "Heel" and walk forward, keeping the pet's attention on the object in your right hand. Take a few steps, stop, ask the pet to "Sit" and reward it with the food or a pat on the head. Repeat, gradually taking more steps between each "Sit" command. Use an upbeat, animated tone to keep the pet's attention. Say "Heel" and reward the pet with praise and/or a treat whenever it walks along at the same speed and the leash is slack. If the pet begins to pull forward, immediately turn and walk in the opposite direction. When the pet catches up, ask it to "Sit" and repeat the above exercise. Once the pet does well in the home and yard, take the exercises to sidewalks in the neighborhood.

Other training options

Watch, wait, and reward

While proper timing of rewards is essential to teach the pet the desired behavior, food lures are not the only way to train. In fact, if you carefully and constantly watch your pet, at some point you'll see the puppy do the very behavior you want to reward (e.g. sit, lie down, or come). The critical issue is for you to reward the behavior immediately while the puppy needs to learn what behavior gets the reward. If a reward is given immediately and consistently every time the puppy does the desired behavior, and only when the puppy does the desired behavior (predictable consequences), the pet will begin to repeat the behavior as soon as it learns what it needs to do to get the reward. At

C.4 Training basic commands using food lure training (client handout #2, printable version available online)—cont'd

At this point you can say the word (e.g., “Sit”) just as the behavior begins. This teaches a command or cue to get the pet to start the behavior sequence that gets the reward. This same technique with immediate reward timing and repetition can be used for any behavior that you observe (come, lie down, go to your bed, drop it). For example, to teach a drop command you can follow your pet while carrying toys, and give a small treat each time the toy is released or “dropped” from the puppy’s mouth. Add a cue word when you see the pet is about to drop the toy. Soon your puppy may be bringing you toys and dropping them just to get its reward, at which point you can move on to training another behavior with your rewards, such as lying down quietly or going to rest in its bed. However, for the pet to understand what behavior is getting the reward, focus on training only one behavior at a time until it is learned.

Clicker training

Another excellent way to reward desired behaviors immediately is to use clicker training, where a clicker is paired with a favored food treat. Once your dog knows that a click means that a treat is coming, you can watch closely until you see the behavior you want your dog to learn, and time the reward even more accurately by clicking as soon as you see the desired behavior and following this shortly after with a food reward. As with lure training, you can then gradually achieve more accurate responses by timing the reward for longer or better responses.

A little extra physical control – leash and head halter control

Another excellent way to help guide a pet into the behavior you want it to learn is to keep a leash attached to maneuver the pet gently into a sit, down, or come, which can then be immediately rewarded. Once successful, say the cue word just before you pull on the leash and very soon the pet should be doing the behavior with the word itself, with less and less need for the pull. Puppies and dogs that are excitable, easily distracted, or hard to get focused may respond better if a leash is used with a head halter to prompt the pet gently to get the dog to focus and guide it into the desired behavior e.g. sit, come. A leash and head halter or leash and front control body harness are particularly useful as aids in teaching the dog to walk on loose leash.

Regardless of how you get the desired outcome, the common element is to give the reward immediately each time you get the behavior until it is consistently repeated, and to add a cue word before the sequence so that the pet learns a word or command that is associated with the behavior so that the behavior will be repeated by the pet for a reward each time it hears the command (or sees the visual signal).

C.5 Behavior consultation questionnaire (client form #3, printable version available online)

Please return this form at least *48 hours* prior to your appointment. Appt time _____ Date _____
If the forms are not received 48 hours prior to the appointment time, you may be requested to reschedule.

Dx: _____

Owner: _____ email: _____ Date: _____

Address: _____ Zip _____

Home phone: _____ Business phone: _____

Family veterinarian: _____ Family veterinarian's phone: _____

Would you like a postconsultation summary letter sent to your veterinarian? Yes ☐ No ☐ No preference ☐

Referred by / How did you hear about us? _____

Please fill out this form carefully and completely. The information which you provide will be very important for diagnosing and treating your pet's behavior problems.

General information

Pet's name: _____ Dog ☐ Cat ☐ Other: _____

Age: _____ years Sex: M/F Breed: _____ Color: _____ Weight: _____

Neutered/spayed: yes [] no [] At what age? _____ At what age did you obtain the pet? _____

Where did you obtain this pet? friend, breeder, pet shop, humane society, other _____

For what purpose was this pet obtained? companionship, protection, breeding, show,
other _____

Time spent indoors: _____ % outdoors: _____ % Is this pet left alone during the day? _____ How long? _____

In what area of the house or yard is the pet kept when

- a. Family at home:
- b. Family away:
- c. Family asleep:
- d. Guests are visiting:

Access to yard through dog/cat door? ☐ yes ☐ no

Describe the pet's personality:

Describe the pet's behavior:

- a. just prior to your departure
- b. just after your return

Diet: _____ % dry (brand _____) _____ % canned (brand: _____)
_____ % table scraps Supplements: _____

When is the pet fed? _____ By whom? _____

Date of last physical exam: _____ List all major surgical or medical problems and approximate dates:

C.5 Behavior consultation questionnaire (client form #3, printable version available)

List all medications (dosage size in mg, schedule, and duration) that have been prescribed for a behavior problem and the results:

List all medications (including dosage and schedule) currently being taken by this pet:

List the number of other pets in the home:

Cats:	female intact	_____	Dogs:	female intact	_____	Other:
	female spayed	_____		female spayed	_____	
	male intact	_____		male intact	_____	
	male neuter	_____		male neuter	_____	

What toys/types of play does the pet enjoy?

What amount of exercise or opportunity to exercise is given to the pet?

Does he or she run free in the neighborhood? _____ How often? _____

Has this pet had any formal obedience training? y ☐ n ☐ Class ☐ Private instructor ☐ I trained my pet at home ☐

What type of collar do you use for training? flat choke chain pinch/prong head halter

Grade the success: failed ☐ fair ☐ good ☐ excellent ☐ Please describe the type of training:

What will the pet do on command?

Does this pet get along with other animals? y ☐ n ☐ If not, please explain:

How does this pet react to unfamiliar people?

What persons are in the pet's environment? Their schedules? Children's ages?

C.5 Behavior consultation questionnaire (client form #3, printable version available online)—cont'd

Behavior problem information

Please describe your pet's behavior problem(s):

What month/year were the problem(s) first noted?

Where and under what circumstances was each problem first noted?

Describe the situations(s) in which the problem is most likely to occur?

The problems occur:	always	usually	rarely	never
when the pet is left alone	☐	☐	☐	☐
in the presence of the family members	☐	☐	☐	☐
during the night when the family sleeps	☐	☐	☐	☐

Frequency of occurrence: ____ times per day ____ times per week ____ times per month ____ times per year

Has there been a change in the frequency or appearance of the problem? ____ Please describe:

What has been done so far to correct this problem?(e.g., discipline, confine, obedience training)

What was the pet's response to the correction?

Were there any significant changes in this pet's environment prior to the appearance of this problem?

- | | |
|----------------------------|---------------------------------------|
| a. moved or redecorated | e. change in family schedule |
| b. boarded | f. new family member / roommate / pet |
| c. visitors (human or pet) | g. other |
| d. diet change | |

How did these changes affect your pet?

Please indicate any other behavior problems:

housesoils	swallows nonfood items	learning	fight
destructive chewing	shy	sleep	runs away
feeding	eats stool	play	destructive scratching
sexual	pacing	jumps on people	pulls hard on leash
grooming	aggressive	unruly	other
digging	barking	bites	

C.5 Behavior consultation questionnaire (client form #3, printable version available online)—cont'd

Please describe all situations which are likely to elicit aggressive behavior, such as growling, nipping, biting, attacking, (e.g., petting, approached by adults, approached by children, only when in the car, reaching for, punishing, pushing, taking food or toys away, disturbed while sleeping):

If your pet has an aggression problem, describe at least the last two or three aggressive incidents in detail on the back of this page.

Please discuss in detail any other information which you feel is relevant to your pet's problem:

C.5 Behavior consultation questionnaire (client form #3, printable version available online)—cont'd

Housoiling data sheet

Family name: _____ Date: _____

Pet's name: _____

What percentage of the elimination incidents in the home are urine ____% stool ____%

Does this pet urinate when petted? n/y When excited? n/y When scolded / punished? n/y

Is there a preference for urinating inappropriately on No Yes

upright surfaces (walls, sides of furniture, drapes) ☐ ☐ _____% upright

horizontal surfaces (floor, top of counters or furniture) ☐ ☐ _____% horizontal

Is there a preference for secluded areas (e.g., closets, under furniture)? ☐ ☐

Do strays or pets from other households frequently visit or call outside windows, doors, or in the yard? ☐ ☐

Surface preference for inappropriate elimination:

Rugs ____ clothing ____ paper ____ soil ____ linoleum or other hard surfaces ____

other _____ no preference ☐

Age when housetrained _____. Never housetrained ☐

Method of training:

Outcome of training:

Medical history

	No	Yes	
Has this pet ever had cystitis (urinary bladder infection)?	☐	☐	Approximate dates: _____
Does any straining or pain accompany urination?	☐	☐	
" " defecation?	☐	☐	
Have you noticed blood in the urine?	☐	☐	
" " stool?	☐	☐	
Is there an increased frequency of urination?	☐	☐	
" " defecation?	☐	☐	
Has there been an increase in water consumption?	☐	☐	
Has there been an increase in the amount of urine voided?	☐	☐	
Does the stool have an abnormal appearance?	☐	☐	
Date of last urinalysis _____	Results: _____		

C.5 Behavior consultation questionnaire (client form #3, printable version available online)—cont'd

Litterbox information (cats)

No Yes

Has this pet ever eliminated consistently in the litterbox? ☐ ☐

When indoors, the pet defecates in the box ____ % of the time never defecates in the box ☐

When indoors, the pet urinates in the box ____ % of the time never urinates in the box ☐

How many litterboxes are available? _____ How many are covered boxes? _____

How often is the litterbox cleaned? _____

Type of litter used in the litterbox: Standard clay ☐ Clumping ☐ other _____

Brand of litter used: _____ How long has this brand been used? _____

Where is the litterbox(s) kept? _____

Please draw a diagram of your house on the back of this form.

Indicate areas of inappropriate urination, defecation, urine spraying, litterbox positions (cats) and feeding areas.

C.6 Puppy play biting (client handout #20, printable version available online)

Why is my puppy nipping and biting family members?

Although often thought to be a teething behavior, nipping, mouthing, and biting in young dogs are generally forms of social play. Teething is more likely to involve gnawing or chewing on household objects. The first thing you must do is to provide a regular daily routine that includes ample opportunity for play. Social play with people could involve controlled chase and retrieve games, as well as long walks or jogging. Many dogs also enjoy engaging in tug games, which may be an excellent outlet for play biting, providing the games are directed toward appropriate play toys and objects (see below) and under human control. However, if the puppy's play becomes too rambunctious or aggressive, these games may not initially be acceptable.

Puppies need to learn to limit the force and strength of their bite (bite inhibition) so they feel threatened and do bite someone, it is less likely to be done with enough pressure to cause an injury. This is something they start to learn while with their littermates. It is one reason that puppies should not go to new homes until 7–8 weeks of age so that they have had time to practice social skills with other dogs. Often littermates play very rough and may even seem loud and aggressive. Sometimes when one puppy bites another one too hard it yipes; this startles the offending puppy and teaches it how hard to bite during play. These lessons are essential for a puppy and people should not intervene in most littermate puppy–puppy interactions. In addition, after puppies have been adopted into the new home, it can be extremely beneficial to have regular interactive social play periods with other dogs or puppies in the home or in the neighborhood. One of the things that puppies need to learn is how much pressure from their jaws causes pain. Without this feedback, a puppy does not learn to inhibit the force of its bite. Because *all* puppies are likely to bite at some point, this lesson is vital for human safety.

How can I stop play biting?

Be sure you are providing the puppy with adequate and appropriate play, exploration, attention, and exercise opportunities. Strategies to stop play biting include:

1. Prevention: adopt a puppy at 7 weeks of age that has had the opportunity to practice normal, social play with littermates and its mother.
2. Set the pup up to succeed: provide a “mouthy” puppy with toys for oral stimulation; soft toys, food toys and tug of war can help satisfy these puppies’ oral and exploratory needs.
3. Be consistent: family members should agree that the puppy is not allowed or encouraged to bite or nibble on a person’s hands, feet, or clothing. What seems cute and innocent in a puppy will not be so at maturity.

How is this lesson taught?

When puppies play with each other, if one puppy bites another too hard, the bitten puppy will yelp, and may stop playing and leave. This sends the message to the puppy that its bites were too hard and if it wishes to continue to play, it needs to be gentle. However, people often do not send this message to their puppy. In the beginning, some owners might allow their puppies to chew and bite on them without any interruption and the puppy assumes that the behavior is acceptable. Children appear to be most vulnerable because their attempts at stopping the biting may not be properly timed or sufficiently abrupt to stop the puppy from biting. In fact a child’s response is often seen by the puppy as an invitation to increase its level of chase and play. Adult supervision or a head halter for training (discussed below) should help to ensure more immediate success.

The message people should send is that mouthing and chewing on hands are painful and lead to immediate cessation of play. All family members must consistently follow the rules for the puppy to understand and learn what is considered desirable behavior and what is not. However, regardless of the technique, you cannot expect the play biting to cease until you first ensure that you are giving regular and sufficient opportunities for play. If your puppy begins to bite or chew and tug on clothing, immediately stopping play (negative punishment) is the preferred response, or walk away if the puppy persists. The message is that all social interactions with you will stop as soon as biting begins. Sometimes a sharp “off” command can be helpful to indicate that social interactions will cease if the biting continues. Playing with the puppy when it is not attention seeking, nipping, or biting is the goal. If all family members are consistent in their responses, the puppy should quickly learn that play biting leads to inattention rather than play. If you teach your puppy to sit or lie quietly before each play session, you should soon have your puppy trained that these behaviors, and not play biting, will be rewarded with a play session.

Having a leash attached at all times during interactions and play can be an excellent means of preventing undesirable behavior, as well as prompting and teaching desirable behavior. Another technique is to emit a sharp “Yip” or “Ouch” as soon as biting begins so that the puppy backs off. Remember, any contact with the skin should

C.6 Puppy play biting (client handout #20, printable version available online)—cont'd

lead to an immediate cessation of play and attention. This sends the message to the puppy that the bites are painful and that biting will cause the end of play. Alternately, a sharp "Off" command and quickly backing away can be effective. Using a verbal cue such as "Yip," "Ouch," "Off," or "Enough" is intended to interrupt the behavior and indicate that play and attention will now cease. This training usually works for those family members that have good timing, are consistent, and clear in their responses. If the puppy persists, chases or immediately repeats the behavior, walking out of the room and closing the door can help to teach the puppy that biting leads to immediate inattention.

What if my puppy keeps biting?

Other techniques are often suggested for play biting. Some involve harsh discipline, like slapping the puppy under the chin or forcefully holding the mouth closed. Remember, pain can cause aggression and cause the puppy to become anxious, fearful, defensive, or perhaps more excited. These techniques also require that you grab an excited puppy, which is not an easy thing to do! Some puppies may even misinterpret attempts at punishment as rough play, which in turn might lead to an increase in the behavior. Physical methods are not recommended. Owners who cannot inhibit the puppy with a yelp could consider a shaker can, water or air spray, noise alarm, or ultrasonic device as soon as the biting becomes excessive. The loud noise or spray is used to startle the puppy, which will likely back up and stop biting. When that happens the puppy should immediately be praised and gentle play and interactions resumed.

The use of a head halter with a remote leash attached allows the puppy to play and chew, but immediate pressure on the leash can redirect and successfully close the mouth and stop biting or chewing as soon as it becomes undesirable. By simultaneously saying "No biting," most puppies will quickly learn the meaning of the command. As soon as the puppy stops, the tension on the leash can be released. If the biting resumes then a gentle and immediate pull and release may be needed until the puppy remains calm, at which point the play can be resumed as long as biting does not begin again. This is one of the quickest and most effective approaches to stop the biting and get immediate control of the muzzle and mouth, and is useful for owners who are not gaining sufficient verbal control.

Remember that this kind of biting is a component of play behavior in puppies. Play is a form of social interaction and your puppy is practicing its social and communication skills. Realize that your puppy is trying to play with you, even though the behavior is rough. Play-motivated bites still hurt! Also remember that each puppy and breed has a different level of intensity or a slightly different form in which play is exhibited so try and match the length and type of play to the needs of the puppy. Be assured your puppy is not trying to dominate or control you. Your puppy needs adequate play and each puppy has different needs. Be certain that you are initiating and scheduling attention and play often enough to meet your dog's needs. Hounds may enjoy games in which they use their nose to find interesting treats or just a long walk with opportunities to spend time with nose to the ground. Retrieving, agility, flyball, and even tug games with toys encourage play that should not lead to mouthing of family members. Keep track of which types of play seem to get the puppy too excited and these should be avoided to help prevent biting behavior. Be sure to provide enough appropriate outlets for energetic puppies; if you aren't meeting your puppy's social, exploratory, and energy needs then these strategies will not work!

Can I play tug games with my puppy?

Games of tug and pull can be a good way for the puppy to expend energy while playing with family members. In this way the puppy can be given an acceptable outlet for pulling, biting, and tugging rather than on the clothing or body parts of people. The rule is the person should stop the game abruptly and socially withdraw anytime the puppy's teeth touch human skin or clothing or the puppy becomes overly excited and agitated. In addition, the tug-of-war game provides an opportunity to teach the puppy to give up toys on command. However, tug games are only acceptable if they remain under your control, if play biting and overexuberant play do not result in aggression, if the puppy's teeth remain on the toy rather than human body parts, and if possessive behavior does not develop over the toy. Select a few tug toys for playing this game and be certain that you are the one to start each session. It might be best to keep the toy(s) out of the puppy's reach until it is time to play the game and to use the game and toy as a reward for training, e.g., sit before play or retrieve. Throughout the play session, if the puppy gets too excited or begins to grab hands or clothing, immediately cease play and begin again only when the puppy is settled. Animation and exuberant play are acceptable; biting on people or their clothing is not! Food rewards can also be used at the outset to encourage the puppy to stop and give up the toy. It's actually a very good idea to teach the pet to release objects on command before engaging in tug games. At the end of each tug session, teach the puppy to give up the toy and reward with a favored chew or feeding toy. If successful, this type of play provides you with a means of controlled interactive play, as well as teaching the puppy to give up the toy on command.

C.6 Puppy play biting (client handout #20, printable version available online)—cont'd

Following each play session, give the puppy a chance to eliminate and some down time. Try and use a crate or confinement pen with object play toys (food-stuffed toys, chews) that have been saved for confinement time so that the puppy can play with the toys or take a nap until the next scheduled play, exercise, training, or elimination session is due.

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C.7 Behavior observation and evaluation form (client form #15, printable version available online)

Home ☐ Hospital ☐ 1st Visit ☐ Re✓ ☐ Weight _____ Time ____ hours Date: _____

Pet: _____ Owner: _____ Attending: _____

Observations

Submissive	0-----10	Assertive	0-----10	Shy	0-----10	Bold	0-----10
Fearful	0-----10	Confident	0-----10	Avoids	0-----10	Play	0-----10
Withdrawn	0-----10	Investigates	0-----10	Vigilance	0-----10	Seeks contact	0-----10
Anxious	0-----10	Relaxed	0-----10	Dog aggressive	0-----10	Dog friendly	0-----10
Calm	0-----10	Excitable	0-----10	Human aggressive	0-----10	Human friendly	0-----10

Comments

Response to people

Response to interviewer

Approach / greeting

Command response

Come

Sit

Stay

Physical contact: Wants it Likes it Indifferent Tolerates Avoids Aggressive Not attempted

Treats

Dry liver Ignore-----Excited Liver whiz Ignore-----Excited Other Ignore-----Excited

Response to family

Interaction

Handling

Solicit attention

Command response

Come

Sit

Stay

Response to others

Response to animals

Response to movement

C.7 Behavior observation and evaluation form (client form #15, printable version available online)—cont’d

Response to sound

Head halter: v well tolerate ——well tolerate——mild resist——mod resist——much resist——fought/failed

Muzzle: v well tolerate ——well tolerate——mild resist——mod resist——much resist——fought/failed

Shake can: Ign———N———XS Comp. air: Ign———N———XS Ign———N———XS

Slap notebook: Ign———N———XS Whistle: Ign———N———XS

C.8 Behavior consultation follow-up (client form #9, printable version available online)

Date: _____

Pet's name: _____ Breed: _____

Cat ☐ Dog ☐ Age _____ Sex _____ Neutered _____ Date of initial consult: _____

Owner's name: _____ Phone: _____

Initial complaint(s): _____

Please use the following rating scale to answer the questions below

0 This question is not applicable	1 I strongly agree with the statement
2 I agree with the statement	3 I neither agree nor disagree with the statement
4 I disagree with the statement	5 I strongly disagree with the statement

1	☐	The session was too long for the nature of the problem
2	☐	The session was too short for the nature of the problem
3	☐	The staff were helpful and knowledgeable in setting up the consultation
4	☐	I was satisfied with the way my pet's care was handled
5	☐	The doctor explained the problem clearly
6	☐	I was satisfied with the explanation of the problem
7	☐	The doctor explained the treatment plan clearly
8	☐	The doctor was well informed with respect to this type of problem
9	☐	The treatment plan for my pet was not too complicated
10	☐	The treatment plan for my pet was complete enough
11	☐	I was able to begin the behavioral program
12	☐	I was able to complete the behavioral program
13	☐	The handouts and resources suggested were useful
14	☐	The product suggestions were useful
15	☐	The drug or supplement suggestions were useful
16	☐	I had sufficient opportunity for follow-up
17	☐	I was satisfied with the outcome of the behavior therapy
18	☐	The consultation fee was appropriate

19. I still have my pet Yes / No ☐ My pet died from unrelated causes
☐ I gave my pet away due to its behavior problem ☐ My pet was put to sleep due to its behavior problem

21. My pet's behavior is
☐ Worse ☐ Same ☐ Mildly improved ☐ Moderately improved ☐ Resolved ☐ Managed but not resolved

Please list treatments used and level of improvement: 1 = none; 2 = mild; 3 = fair; 4 = good; 5 = resolved.

C.8 Behavior consultation follow-up (client form #9, printable version available online)
—cont'd

Behavioral technique, drug, or product used	Indicate level of improvement and comments
Additional comments _____	

C.9 Informed consent for behavior-modifying drug use (client form #5, printable version available online)

Pet's name: _____ Sex: _____ Age: _____ Weight _____

Owner name: _____

Owner address: _____

City: _____

Telephone: _____ Email: _____

I, the undersigned, being the owner or duly authorized agent for the owner of the above animal, understand that the drug being prescribed, dispensed, or administered is not approved for use in dogs and/or cats for the condition being treated. This means that safety, effectiveness, and side-effects have not been comprehensively established for the purpose or species used.

☐ This drug is being dispensed in its original form but is not licensed for the use or species for which it is licensed.

Name of drug: _____

Dose/frequency _____

Special instructions: _____

The drug is labeled for use in (indicate species and use) _____

or

☐ This drug has been compounded. It has not been approved by regulatory authorities for use in this format and has not undergone rigorous testing for efficacy or stability. However, there is no equivalent veterinary licensed product in a dose or strength that is suited for my pet's needs.

Name of drug: _____

Frequency/dose _____

Special instructions: _____

This drug is licensed for use in its original form for (indicate species and use if any) _____

I understand that the drug is being used in a manner that is off label and I accept the consequences of its use. Although I understand that the drug is being prescribed in the hopes that it will be beneficial for my pet, I will not hold the veterinarian responsible for any adverse effects, be they physical or behavioral, that might arise from the use of this drug. I have been advised of the potential side-effects, adverse effects, and instructions for monitoring, including:

I have been advised to discontinue the use of the drug and seek veterinary care immediately should any adverse or unexpected effects be exhibited. Since this drug is being used in an attempt to modify or alter behavior, I have also been advised that if there is an undesirable change in my pet's behavior or the problem gets worse, the drug should be discontinued and I should contact my veterinarian. I understand it is possible that this drug may not alter the course of the behavior problem, and that my animal may continue with the behavior problem whether or not the medication is administered. I also understand that since the product is not licensed for this use all potential adverse effects may not be known at this time. I will follow my veterinarian's advice regarding any laboratory or clinical testing required to safeguard against side-effects and to allow adequate ongoing patient monitoring. No other drugs,

C.9 Informed consent for behavior-modifying drug use (client form #5, printable version available online)—cont'd

herbal remedies, or supplements will be used at the same time as this medication except as discussed with my veterinarian.

I hereby give my informed consent to the administration of this drug to my animal. I accept full responsibility, legally and financially, for all actions that may occur from the use of this drug.

I have been advised that a follow-up examination or assessment is next due on: _____

Signed: _____ Print Name: _____

Date: _____

C.10 Infants, children, and dogs (client handout #17, printable version available online)

Preparing puppies for children

Preparation for a good relationship between the pet and children begins when the dog is a puppy. To accomplish this, there should be frequent opportunities for the young pup to meet children during its early months of life. In fact, up to 3 months of age, puppies are most social, and the experiences they have and the people they meet at this age can make a lifelong impression. However, ongoing positive exposures through to adulthood are also necessary to maintain healthy social relationships. Of course, genetics also plays a role in how a dog interacts with people and other animals.

Puppies should be introduced to children when they are calm and treats should be used to facilitate introductions. Puppy classes that encourage family attendance can be a way to meet children in a controlled environment. Early positive interactions help prevent the development of fear, avoidance behavior, and aggression toward children when the pet is older. Another concept the young pup needs to learn is that being touched by people can be a pleasant experience. However, the reality is that most pets will have some limits on when, how frequently, with whom, and the quality and type of contact that they will tolerate or enjoy.

All family members should make a point of gently and positively handling the puppy in all the ways that a child might touch it. Making positive associations (e.g., with treats or during play) while touching the tail, ears, and body, and grasping the collar as well as teeth brushing, grooming, and nail trimming should help the dog adapt to contact with all parts of the body, which might be similar to what might be encountered with a child. Any type of physical punishment, threats with a hand, or forceful interactions (e.g., pinning, roll over) should be avoided. All pets must learn that the human hand is friendly and not to be feared (i.e., associated with treats, receiving toys, and affection). If the pet associates hand movement with discomfort, it might bite when a child moves a hand toward it.

Some dogs show aggression when approached while they eat. This behavior might be avoided by teaching the young pup that it is good to have company at dinner time. A family member could occasionally sit on the floor with the puppy while it eats. During this time, treats can be intermittently added to the food bowl or offered to the puppy while eating. Combine this with gentle petting while giving the treats. The family can pick up pieces of kibble from the bowl, and hand feed them to the puppy. The bowl can also be periodically removed for few seconds, and a small piece of meat or cheese added and then the bowl placed back on the floor. Family members should occasionally drop a piece of meat or a chunk of canned food into the bowl as they walk by. By doing these exercises, the pup should look forward to having people nearby at meal times and that humans will not steal their food. However, if any of these exercises cause fear or apprehension, the action should cease and the family should seek veterinary guidance. Repeatedly taking the food bowl away while the pet is eating without a positive association (e.g., getting a special treat) will just irritate the pet and should be avoided.

Preparing the adult dog for the new baby

The first thing to consider is the dog's temperament. All types of aggression should be considered potentially dangerous, especially if the dog growls or snaps when touched, disturbed while eating, playing with toys, or resting. If the dog exhibits any type of aggression this should be managed or resolved before the baby arrives. Even if the dog gets along well with children, the child that inadvertently gets too close to a dog that exhibits territorial aggression may be injured. Young children are more likely to be bitten by family pets or familiar dogs than unfamiliar dogs. Therefore, even if improvement is achieved, the family should be aware of any potential risks and have a practical and realistic understanding of the limits as to when and how the child should interact with the family dog.

As soon as the mother-to-be learns of her pregnancy, some thought should be given to preparing the dog for the inevitable changes. Dogs are likely to become anxious if the routine, environment, or the way the family interacts with the dog is changed or lacks predictability. Therefore gradual adjustments should be made before the baby arrives. Feeding, exercise, and play schedules, as well as sleeping and resting areas and any new routines or rules (e.g., rooms the dog is permitted to enter, furniture on which the dog is allowed to sleep, jumping up during greeting, barking at the window) will need to be put into place ahead of time to fit the family's situation once the baby is home.

If the family is consistent and predictable in their responses, the dog should quickly learn those behaviors that get rewards and those that do not. This is particularly important when giving attention. If the pet gets attention by nudging, head pressing, pawing, or licking, the family must stop rewarding these behaviors as they are not acceptable ways to get attention and could be problematic if the baby or child needs care or attention (e.g., carrying, changing, feeding). By consistently ignoring these behaviors and rewarding a desirable way of getting attention (e.g., a relaxed down) the dog should eventually cease the undesirable and offer the new calm behavior that gets the

C.10 Infants, children, and dogs (client handout #17, printable version available online) —cont'd

attention. The pet may initially be confused and frustrated and may escalate the behavior into more intense attention seeking that might include scratching, jumping up, barking, grabbing, or even biting. If the family even occasionally gives attention for these behaviors, they intermittently reward these more intense behaviors. Therefore, well before the baby arrives, the family should begin a program of structured interactions and predictable consequences (learn to earn), so that the pet learns that calm and settled behaviors are the way to get rewards. This effectively puts the rewards (affection, eating, treats) under the dog's control by consistently and predictably training that only calm responses (sit/watch, down/stay, lying on its mat) will be rewarded. To teach the dog what is desirable, food lures, a head halter (which can be left attached with a leash dragging), and obedience commands can be used or just waiting and watching until the desired behavior is displayed and then immediately rewarding (clicker training can be particularly effective). Also see our handout (12) on reward training. If the family is consistent and predictable the pet should soon learn that these calm behaviors are the way to get attention.

Commands (cues) should be given prior to the pet's behavior (sit, focus, down and settle, or go to a mat or crate) and rewards timed to follow immediately the behavior that is being trained. Other behaviors that are permitted now, but won't be permitted when the baby is at home, must also be addressed (e.g., jumping up, barking at windows, lying on furniture, climbing into the lap) by training and rewarding desirable alternatives (e.g., sit for all greetings, rest on your mat).

The dog might also be prepared for the homecoming by exposing it to the noises and smells of the new baby. If the dog gets upset when it hears strange sounds, a recording of baby noises (e.g., cooing, crying, screaming) can be used in a desensitization and counterconditioning program. The recording should first be played at sufficiently low volume that the dog shows no anxiety, while jovially requesting obedience commands for tasty food treats or some play time. Very gradually, the volume can be increased as the weeks go by until the pet seems comfortable with the noises at high volumes. A towel or blanket with the baby's scent can be taken home from the hospital to prepare the pet for the new smells that will arrive with the baby. The object should be presented while the dog is relaxed and taking treats or playing with a favored toy. Some dogs will be anxious when the parent is carrying or nursing the new baby. Testing the dog by carrying around and fussing with a doll (especially one that actually moves and makes crying sounds) can be useful. If there is any anxiety, a positive association should be made with this doll by giving the dog favored food rewards, affection, or a favored play toy whenever the doll is present.

When the baby comes home

If the dog has not seen the mother for a day or two, there will probably be a great deal of excited greeting behavior when she arrives with the baby. Therefore, if someone else carries the baby into the home, the mother can greet the dog without worrying that it might accidentally scratch the baby. It is important to set the dog up to succeed by anticipating problems and taking steps to prevent them. By taking this approach, scolding, punishment, and anxious feelings associated with the presence of the baby can be prevented.

The family should wait until the excitement has died down and the pet is calm before introducing the dog to the baby. That may be later in the same day or a few days afterward. The dog should be brought to meet when calm and under good control. Careful judgment must be exercised in deciding when to allow the dog close enough to sniff. If there is a chance the dog might jump, use a leash. If more control is needed, a head halter and leash can be utilized. If there is *any* chance that the dog might bite, consider using a lightweight basket muzzle (or avoid the situation entirely). If it can be predicted that a head halter or muzzle is likely to be utilized, it would be best for the family to accustom the dog to wearing these before the arrival of the baby. The family should never (no matter how sweet, trustworthy, or friendly the pet appears) allow an unsupervised dog around the baby.

It is especially important to be vigilant when the baby is crying, kicking, or waving its arms. This could cause a curious dog to jump up and injure the infant. During these times, it is wise to train a desirable response, such as a "Down-stay" away from the baby and give favored rewards, or have the dog go to its room, mat, or yard with a special chew toy. The family should immediately seek additional guidance from a qualified behaviorist if there are any suspicions that the pet is exhibiting predatory signs (stalking, strong focus, unusual interest) around the baby.

Whenever the dog is in the room with the baby, the family should remain positive with one family member focused on taking the dog across the room and rewarding acceptable behaviors (e.g., calm, responding to commands, orienting to the baby in a calm manner) with treats, food, play, or affection. With success, the exercises should gradually be moved closer to the baby. The idea is to promote relaxed behaviors and to make the dog look forward to the baby's presence by giving favored rewards each time the dog sees or hears the baby. This association can be

C.10 Infants, children, and dogs (client handout #17, printable version available online)— cont'd

made more dramatic by reducing the amount of attention or treats the dog gets when the baby is not around. In this way, the dog learns that the presence of the baby is associated with positive events, and the absence of the baby is not. The biggest mistake families make when they try to shape the dog's behavior is to concentrate on telling the dog what is wrong, instead of rewarding what is right.

As children grow up

As the baby continues to grow and mature, the dog will be exposed to a variety of new stimuli from crawling to toddling to walking, and even trying to approach or take things away from the dog. Even if the dog has adapted nicely to a particular stage in the child's life, the family must always be prepared for a change in the relationship between the child and pet. Interactions between dogs and young children should always be supervised. The spontaneous, active behavior of children is exciting for most dogs, and might elicit rough play, chase, or anxiety. Encouraging the child to give tasty food rewards to the pet for responding to "Sit" commands is a simple way to teach the pup to keep its paws on the ground and expect good things whenever it is around children.

An important thing to remember is that children are great imitators. Family members must not do anything to the pet that they do not want the child to do. This includes hugging, physical punishment, teasing, and rough play. Children don't know how to interact with animals, so they must be taught how to approach, handle, and play with the pet. For example, fetch is a great game for the child and dog to share. While some dogs will tolerate physical contact, the child will be safer if taught to avoid making contact around the eyes, ears, and head, and to pat the dog along its side. Hugging, getting face to face, and lifting are not well tolerated by some dogs and are best avoided. In fact, young children are more likely to be bitten on the face or head; boys in the age range of 5–9 are at highest risk, and most dog bites in young children are by the family dog, in contexts of resource guarding, or benign interactions such as hugging or petting. The dog should be physically confined away from the child (e.g., dog in crate or secure room, child in playpen, crib, or own room) so that an adult can supervise each approach and ensure that the dog is comfortable with the interaction. Be particularly careful about security and safety (and seek a behaviorist's guidance) if the dog ever growls, threatens, or shows active avoidance when it is sleeping, resting, or handled. Never punish or force affection on a dog that resists. This could lead to increased aggression or could suppress the growling behavior so that the pet no longer warns, but may still bite, when it wants to be left alone.

Children should have some degree of positive control over the pet and this can begin at a relatively early age. Once the child is talking, a family member can hold the child in the lap and teach the pet to sit when the child gives a command and drops a treat on the floor as a reward. This can be done by coaching the child to say the command word at the same time as the adult. Gradually, the adult can phase out the command and the child can give the command alone. This can also be done with other commands. When the child is old enough, it can be taught the same rule structure as the adults so that the dog consistently learns to lie down or sit calmly before giving it things that it wants (toys, treats, play). Nonaggressive pets can be taught to look forward to having the child present while they eat if an adult carries the child and has it toss small pieces of food in or near the bowl.

Children must also learn rules about other pets. The most important rule is that the child must *never* touch another family's pet or give it food unless an adult gives permission. Dogs on a leash, by food, by toys, sleeping, tied down, or running loose should never be approached. All family members must also follow these rules as a model for the child's behavior. Children must be taught to recognize and avoid potentially dangerous behaviors. The family should review aggressive postures (growling, loud barking, hair standing on end) and fearful behaviors (trembling, crouching, ears back, tail tucked) so that the child learns to avoid these animals. If the child is approached by a dog that is acting aggressively, the child should stand very still like a tree, say nothing, hold the arms against the body, and avoid eye contact. If the child is on the ground or knocked down, he or she should curl into a tight ball, cover the ears with his or her fists, and remain still and quiet until the animal moves far away. Some excellent references are available, such as dogscatskids.com, bluedog.com, doggonessafe.com, bowwowwow.com, and growingupwithpets.com.

C.11 Infants, children, and cats (client handout #16, printable version available online)

How the cat responds to a new baby or child will depend upon previous experiences as well as the cat's genetic temperament. The most sensitive time for cats to begin learning positive social experiences is in the first 2 months of life, although ongoing positive exposures through to adolescence also play an important role. Some cats will adapt quickly to children and new babies by either ignoring them or eventually seeking them out for investigation or social contact (e.g., bunting or cheek rubbing), while others may immediately be inquisitive, playful, and affectionate. While investigation, seeking affection, and social contact may be desirable, these behaviors must be well supervised since they can still lead to injury to the child, or inappropriate responses from the child to the pet. Fortunately most fearful cats will avoid as long as they are not restrained and have sufficient opportunity to retreat to an area in which they feel safe and comfortable. However, cats that respond with aggression can be particularly dangerous.

There are three basic considerations for helping cats to adapt to new babies or children. The first is to adapt the cat's schedule, permitted behaviors, family interactions, and environment slowly so that it is prepared for the arrival. The second is for the family to supervise all interactions with the cat and the baby to ensure safety, and so that positive interactions can be rewarded. The third is to help the child adapt to the needs and tolerance of the cat so as to prevent the development of behavior problems.

Advanced preparation of the home

Many cats can become stressed and anxious when there are changes to their daily routine, social interactions, or environment. The cat's response may be a change in behavior or attitude with respect to humans or other cats (increased fear and avoidance, irritability, or aggression), urine or stool marking in the home, or displacement behaviors such as overgrooming and hair loss. There may also be an impact on the cat's physical health, such as a change in appetite (decreased or increased), activity level (increase or decrease), sleep-wake cycles, or even medical conditions with a stress-induced component (e.g., feline interstitial cystitis, a stress-related inflammatory disease of the bladder). The family should consider how the daily schedule, social interactions, and household will need to be changed when the new baby arrives and slowly begin to adapt the cat in advance of the new arrival. Whenever possible change should be made slowly and should be associated with positive events and interactions such as food, treats, affection, and play. For example, if the cat initiates play by chasing and play-attacking moving objects, the family should initiate and provide play sessions and play toys to meet the cat's needs. If there are rooms, counters, and areas of the house that will be out of bounds for the cat when the child arrives, then the family should begin in advance to keep the cat out of these areas, and teach the cat where it is allowed to sleep, play, and explore. It may also be advisable to set up any new furniture in advance of the baby's arrival, as some cats can be particularly sensitive or reactive to new structures and odors.

Some cats are anxious when they hear strange sounds. For these cats, a recording can be obtained of baby noises (e.g., cooing, crying, screaming). The recording should be played at a level that is low enough to cause no anxiety while tasty food treats, play, or catnip toys are offered. The volume should be gradually increased over several weeks until the cat seems comfortable with these noises at full volume. To prepare the pet for the new smells that will arrive with the baby, a towel or blanket with the baby's scent can be brought home from the hospital. The cat should then be taught to associate the object with favored rewards. On occasion, some cats may become anxious or overly investigative when a family member carries, changes, or nurses the new baby. Testing the cat by carrying around and fussing with a doll (especially one that actually moves and makes crying sounds) can be useful. A positive association should be made with this doll using favored play toys, treats, or food rewards before the baby arrives. If there is concern that additional safe control will be required to supervise and introduce the cat and baby, then training the cat to wear a body harness or giving it a separate room in which it can be housed comfortably can be extremely useful. In addition, using favored toys or treats, the cat can be trained to respond to a few positive commands (e.g., come, let's play, to your room), which could then aid the owners in engaging the cat in desirable behaviors at times when problems might arise.

When the baby arrives

The simplest rule to help with the arrival of the baby is for all interactions with the cat and the baby to be supervised and kept positive, while monitoring for potential problem behaviors (fearful or overly aggressive, affectionate, or playful). Any major problems should be addressed with the aid of a qualified behavior consultant. At all other times, such as when the baby is sleeping or playing in its playpen, access should be prevented. Even an affectionate cat could choose to lie down next to the young baby, and this might be particularly dangerous for babies that cannot yet raise their heads or turn over. When the cat and child are together, all appropriate interactions should be reinforced. It can be particularly helpful to identify all things positive to the cat (food, affection, play, catnip, treats) and provide

C.11 Infants, children, and cats (client handout #16, printable version available online)— cont'd

them when the baby and cat are together, while reducing their availability when the baby is not around. If the cat reacts fearfully or unpredictably or there is a potential danger or risk to the new child, then access must be prevented and a body harness might be used to ensure future safe introductions. If there are any changes in the cat's general demeanor, health, activity level, feeding, drinking, and elimination, these are signs that should be immediately reported to the family veterinarian. Occasionally, Feliway or anxiolytic drugs combined with the behavioral program can help the cat to adapt.

As children grow up

As the child grows and becomes more mobile and interactive, the relationship between the cat and child may change. Fear and anxiety, as well as exuberant playful behavior, could become problematic. As always, supervision to assess the cat's response to the child and the child's interactions with the cat is the best way to ensure that desirable responses are rewarded and any undesirable responses are identified and the cat or child calmly removed from the situation. If problems do arise, preventing similar types of future interactions may be the safest plan, but a program of careful and entirely positive reintroduction might effectively improve the relationship.

As the baby continues to grow and mature, the cat will be exposed to a variety of new stimuli from the baby crawling to toddling to walking, and even trying to approach, grab, chase or take things away from the cat. Even if the cat has adapted nicely to a particular stage in the child's life, the family must always be prepared for a change in the relationship between the child and pet. Interactions between cats and young children should always be supervised. The spontaneous active behavior of children might be frightening for the cat or elicit unacceptable play behavior.

An important thing to remember is that children are great imitators. Family members must be good role models; they should not do anything to the pet that they do not want the child to do. This includes hugging, physical punishment, teasing, and rough play. Children don't know how to interact with animals, so they must be taught how to approach, handle, and play with the pet. While some cats will tolerate physical contact, the child will be safer if taught to avoid making contact around the eyes, ears, and head, and to stroke the cat along its side. Hugging, getting face to face, and lifting are not well tolerated by some cats and are best avoided. On the other hand, be aware of what your cat likes and dislikes. If it enjoys being lightly scratched between its ears or stroked over the shoulders, these types of interactions might be a place for the child to start. However, if the cat might bite when petted, or when certain parts of the body are touched, these types of interactions must be avoided and the practicality and safety of keeping this type of cat in a home with children must be evaluated and rehoming may need to be considered.

Children must also learn rules about other pets. The most important rule is that the child must *never* touch another family's pet or give it food unless an adult gives permission. Cats running loose should never be approached. All family members must also follow these rules as a model for the child's behavior. Children must be taught to recognize and avoid potentially dangerous behaviors. The family should review aggressive postures (growling, hissing, hair standing on end) and fearful behaviors (trembling, crouching, ears back, tail tucked, attempts to escape) so that the child learns to avoid these animals.

Other resources include a DVD that teaches children to be safe with cats, *Dogs, Cats and Kids: Learning to be Safe with Animals* (dogscatskids.com), and the website www.growingupwithpets.com.

C.12 Aggression release (client form #1, printable version available online)

Name of animal: _____ Case #: _____

I certify that I am the owner of the above-mentioned animal and that I have sought behavioral counseling for my pet for advice on decreasing its aggressiveness.

I understand that aggression by animals can cause injury, including fatal injury, to other animals, to other people, and to me. I understand that treatment for aggressive behavior is not a guarantee that the aggression will be successfully controlled, and that it is impossible to ensure that my pet will not cause harm in the future.

I understand that the only way to ensure *absolutely* that my pet will never cause harm in the future is to euthanize it (end its life). I understand that if I do not euthanize my pet, it will be my responsibility to take appropriate precautions to prevent my pet from causing harm to others. These precautions may include, but are not limited to, informing persons near my pet of its tendency for aggressive behavior, keeping it on a leash, muzzling it, using a head collar, and/or keeping it restrained behind doors, gates, or fencing. I also understand that it is my responsibility to be aware of and comply with all relevant ordinances concerning aggressive animals, as well as any bylaws or acts that specifically apply to my pet. Finally, I understand that, should I choose not to euthanize my pet and it causes harm in the future, I may be held liable for such harm.

I hereby certify that I have read and understood the above and that I am signing this authorization with the full understanding that the treatment given my pet may not eliminate its aggressive behavior.

Signature of owner

Date

Printed name

Original release form courtesy of:
Sharon L. Crowell-Davis DVM PhD
Diplomate, American College of Veterinary Behaviorists
College of Veterinary Medicine
University of Georgia
Athens GA 30602

C.13 Counterconditioning to approaches at the food bowl (client handout #11, printable version available online)

The purpose of this exercise is to help your dog feel comfortable when you approach the food bowl. If your pet lunges aggressively when you are near the food bowl or if you do not feel completely comfortable doing this exercise, call a behavior consultant before beginning. Make sure your dog is completely relaxed before beginning.

Put your dog's food bowl down with the normal amount of kibble. Stand at a distance from the bowl at which your dog is completely relaxed and non-reactive (no sign of tense body posture, nervous glancing toward anyone nearby, hovering low over food and eating fast, lip lifting, growling, etc.)

Make sure that you have treats (meat, cheese, canned dog food) which are better than the dry food in your dog's bowl. Say your dog's name in an upbeat tone and then toss a treat into the bowl or next to it. Continue walking about beyond the safe distance, occasionally tossing food. As the pet becomes more relaxed and seems to anticipate and look forward to the tossed food, very gradually move a slight bit closer, and repeat.

Continue walking back and forth tossing food, as well as approaching from different directions, but be careful to never get close enough that the pet becomes less relaxed. Watch your dog's body language. If it is tense at all, walk away and begin the exercise on the following day, standing farther from the bowl.

Avoid any scolding or reprimands if the pet makes a mistake and growls. The sessions should be 100% fun, a game. The goal is to teach the pet to want to have someone nearby when it eats, not merely tolerate a person's presence.

C.14 Teaching structured interaction training (SIT) for all interactions (client handout #13, printable version available online)

Purpose of these exercises

- Gain more control of the pet by consistently rewarding what is desirable
 - Reduce uncertainty and anxiety by being structured, predictable, and consistent so that your pet learns which behaviors get rewards
 - Train behaviors that are calm and relaxed which might then be extended to other situations where problems might arise
1. Teach the dog to sit on cue. Practice until it is sitting every time and in a variety of different locations.
 2. Ask your pet to sit before you give it anything it wants or needs (e.g., petting, play, feeding, going outside, getting on the furniture).
 3. Each time your dog approaches you and requests attention in an impolite way, such as pushing on your hand, pushing a toy at you, or leaning on you, ignore it for 5 seconds or more, then ask it to sit and reward it. Continue this until it automatically sits for attention. Then go to the next step.
 4. When your pet approaches you for attention or a reward, do not acknowledge it until it sits. This can be difficult but you must wait your dog out. If your dog sits, reward it. If any behaviors are exhibited except sit, simply ignore or walk away.
 5. Don't be concerned about ignoring your pet or walking away. You will soon have another chance to interact, since your dog is very likely to seek you out again shortly. If it offers a sit when you ignore it, praise it, reward it with a treat or toy, or lavish it with attention. Your dog is getting it! Within a couple of days your dog should sit politely (sometimes referred to as "say please") for **all** attention (this might also be referred to as "saying please" for all interactions).
 6. Very gradually request longer sits and more relaxed postures. If your dog chooses to lie down for attention, this is also acceptable.
 7. Continue to reward your dog if it sits or lies down calmly for attention throughout its life.
 8. Maintain structure and predictability in all your interactions:
 - (a) Anytime you have something that your pet finds rewarding, ensure that your pet learns what response is expected before the reward is given.
 - (b) Before giving your dog its food, a feeding toy, or a chew toy, have it sit calmly or consider having it lie on a bed or mat next to its feeding area before giving the reward.
 - (c) Practice sit before you attach the pet's leash, before going out the door for a walk, and before crossing the street. You might even consider a sit-stay before your pet is allowed to follow you up or down the steps.
 - (d) Also practice consistency during walks. Do not walk ahead unless your dog maintains a small amount of slack on the leash. Have your dog stop or sit if it pulls ahead and only proceed if the leash remains slack. In short, the reward of walking forward is given only if the dog is not pulling.

C.15 Teaching “Leave it” (client handout #25, printable version available online)

Teach your dog to turn away from a treat

1. Start with your dog sitting or lying down facing you.
2. Place a treat in your hand and make a fist.
3. Offer your fist, palm side up, to your dog with at least 30 cm (12 inches) of space between its muzzle and your fist. Do not move your hand towards your dog or say anything. Your dog might sniff, snort, lick, suck, and paw at your hand. Be patient.
4. As soon as your dog takes its nose away from your hand, even for a nanosecond, *immediately* open your hand, praise it, and let it eat the treat.
5. Repeat steps 2–4 until your dog no longer moves towards your fist as soon as you present it. This may take seconds, minutes, or several sessions, depending on your dog. When you present your fist and your dog sits still, backs away, or looks away, you are ready for the next step.

Add a verbal cue (command)

6. Say “Leave it” in an upbeat tone and immediately present your fist as before. If your dog does not move towards your fist, backs away, or turns away, *immediately* open your hand, praise, and let the dog eat the treat. If it sniffs or mouths, calmly withdraw your hand (do not jerk your hand away quickly), wait a few seconds, and try again. When your dog responds to “Leave it” correctly when you say it, you are ready for the next step.

Increasing the difficulty

7. Say “Leave it” and present your fist, then count to three. If your dog does not approach, turns away, or backs up, praise, open your hand, move it toward the dog, and let it eat the treat.
8. Repeat step 7 again and again until you have increased the amount of time that your dog waits for the treat to 5 seconds. Now that your dog has learned to respond to the cue “Leave it” by not touching your hand with its mouth for 5 seconds, it is ready for the next step.
9. Say “Leave it” and present a treat in your *open hand*, at least 30 cm (12 inches) away from its muzzle. If your dog does not try to get the food, praise it, and give it the treat. If it tries to get it, just close your hand. When it backs away, looks away, or turns away, repeat this step by again presenting your open hand with a treat in it while saying “Leave it.” When it backs away, looks away, or just doesn’t come forward, praise, move your hand towards it, and let it eat the treat.
10. Repeat step 9 until the dog will sit quietly for 5 seconds while you hold a treat in the palm of your hand. Now you are ready for step 11.

Generalization (making it work for other objects)

11. Place an object on the floor that your dog is not that interested in (e.g., heavy pot, book). Allow your dog to sniff it for a second, and then ask your dog to “Leave it.” When it does, praise and toss a treat about 30 cm (12 inches) away. Repeat this step again and again. Eventually, most dogs will lose interest in the item entirely and just sit and stare at the owner instead of going back to the item. When this happens, reward the dog for sitting and end the session.
12. Repeat step 11 many times with a wide variety of items. You might be able to move through multiple items in one session or you may only be able to get through one. Keep the value of the item low. For example, if your dog guards bones, don’t practice with those. You must get many successful repetitions in before you can practice with a high-value item. Practice “Leave it” throughout the day when your dog shows interest in something, even if it is something that it can have. Remember, you are just trying to get repetitions in so that you can practice. For example, if you are on a walk with your dog and it is sniffing the grass, tell the dog to “Leave it.” When the dog picks its head up, reward it. Then let it go back to sniffing. If it is carrying a toy in the house, ask it to “Leave it.” When it drops the toy, reward it and let it pick it back up. Continue in this way until the dog becomes very proficient at dropping things and lifting its head when it is sniffing things.
13. Finally, it is time to use “Leave it” with the items that cause your dog to react. Make sure that the treats that you have are better than what your dog has. Hold a toy that it has previously guarded, but can have (not a stolen item). Hold it in front of you and tell the dog to “Leave it.” Reward the dog if it hesitates, looks at you, or stops its

C.15 Teaching “Leave it” (client handout #25, printable version available online)—cont’d

forward movement. Toss the treat about 60 cm (2 feet) away and start over. Practice for 1–2 repetitions and then give the dog the item in its safe place. Do this once daily until the dog doesn’t go toward the item at all.

14. When the dog is proficient at this, start to put the item on the floor. When you tell the dog to “Leave it” as above and it does, toss the treat about 60 cm (2 feet) away and pick the item up. Then repeat the exercise. After two tries, give your dog the item in a safe place.
15. Practice, practice, practice!

C.16 Teaching “Watch” (client handout #26, printable version available online)

1. You may begin this exercise with your dog standing, sitting, or lying down in front of you. You may be standing or sitting.
2. Start with food in both hands. One hand (your dominant hand) should have one piece of food in it. The other hand should have multiple pieces. Your dominant hand should be at your side and your other hand behind your back. Say “Watch” as you bring the hand with the food up to your eyes. Your dog will most likely follow the food and look up at you. When it does, praise and hand a treat from your nondominant hand.
3. Repeat this exercise many times over several sessions. When your dog follows your hand each time, you are ready for the next step.
4. Practice the same way, except take the food out of your luring hand (the one which is moving). Continue to lure with your empty hand and reward from your other hand. In other words, you are practicing in the same way that you did in step 2, except your luring hand is empty. When this happens, praise and give the food reward. Some dogs will begin to look back and forth from the hand with the food to your face. Be silent and still. When your dog commits to looking at your face, praise enthusiastically and give the food reward. When your dog is successful at this step, you are ready for the next step.
5. Begin by luring your dog with your empty hand as you have been for 4 or 5 times, while saying “Watch.” On the sixth try, say “Watch” without moving your hand. If your dog looks at you, praise, reward, and end your session. If your dog doesn’t look at you, follow the instructions for dealing with this type of behavior in step 3.
6. Lure your dog once or twice and then say “Watch” without moving your hand. When your dog looks at you, praise and reward. Continue with the training session by saying “Watch” without moving your hands.
7. Begin by asking your dog to “Watch” without any hand movement. Remember to reward all successful attempts.
8. Continue as described above, slowly increasing the amount of time your dog has to look at you before receiving the reward during each training session until your dog can maintain eye contact with you for 10 seconds.
9. Say your dog’s name and “Watch” when your dog is turned away from you, but still within 50–100 cm (2 or 3 feet). When your dog looks at you, praise enthusiastically and reward generously. If your dog doesn’t look at you, get closer and use the food lure to get the dog to look at you. Repeat this step until you don’t have to lure the dog any more.
10. Begin to practice in different places in your home, outside, and in new places.

C.17 Teaching a dog to fetch and drop objects on command (client handout #7, printable version available online)

"Fetch" and "Drop it" are excellent commands to teach a young dog. Fetch is a great game that most dogs love. It is mentally stimulating, wonderful for wearing the pet out, an acceptable type of play for children and dogs, and can provide a means for social interaction between visitors and shy dogs. Teaching the pet to drop things on command reinforces the idea that the owner has control over the dog, and comes in handy when the pet has something in its mouth that it shouldn't.

Teaching fetch

Pick a time when the pet is in an energetic mood and there are few distractions. Toss an interesting toy a short distance. As the pet picks it up and turns to look at you, lower your body, take several quick steps in the opposite direction, wave your hand and wiggle your fingers in an animated way, and say "Fetch" in a very upbeat tone. This should catch the attention of the pet and prompt it to come toward you. Continue to repeat "Fetch" as the pet approaches.

If the pet runs the other way with the toy, lies down and chews it, or does not come all the way up to you, simply walk away and end the play session. You must avoid chasing after the pet, walking toward it to take the toy, or attempting to coax the pet to return.

Drop it – first step

The first step involves luring the pet to drop the toy and teaching a cue word. As the pet approaches with the toy, place a piece of food between your forefinger and thumb. When the pet reaches you, move your hand and the food toward the pet's mouth with a bit of a flourish. Hold the food in front of the mouth without saying anything. When the pet opens its mouth to take the food, the toy will fall out. As this is happening, say the cue words, "Drop it," and pick up the toy with the other hand as you allow the pet to take the food.

Repeat until you notice that the pet is starting to drop the toy as your hand just begins the downward movement toward it.

Use a small piece of food that is more interesting than the toy, but not so interesting that the pet will forget the toy and only focus on the food. Each time the pet takes the food from your hand, say "Good dog." If the pet is not interested in food, you can use a second toy in place of food to lure it to drop the fetched toy.

Drop it – second step

The next step is to turn the cue words into a command. Instead of putting the food in front of the pet's mouth and waiting until it opens to say "Drop it," say "Drop it" as you begin to swing your hand down toward the pet. Pick up the toy, give the food, and say "Good dog." Repeat this at least 12 times before advancing to the next step.

Drop it – third step

The last step involves gradually phasing out the food. Hold your empty hand like you have food in it, swing it down toward the pet, and say "Drop it." When the pet drops it, say "Good dog" and give it loads of praise. As you continue to practice, alternate between a food reward and praise, but vary the ratio of praise rewards to food rewards so the pet doesn't know exactly which reward it will get each time it drops the toy. As the training progresses, you should be using more praise and less food. When combining the drop and fetch exercises, your dog may also learn that by dropping the toy, it gets the opportunity to chase and fetch it again. End the session on a positive note with your dog dropping the toy and getting a final reward.

Give it

If you prefer to have a "Give" command, you would proceed exactly as with "Drop it," but in each case you would place your second hand under or on the toy and reward the dog when the toy is released into your hand.

Having problems?

If the dog will not drop the toy, you can first increase the value of the lure while using a toy to fetch that is of less interest to the dog.

Another method for teaching drop is to watch the puppy closely without interacting any further until it eventually drops the toy or object it is carrying. As soon as the toy is dropped, say "Drop it" and call the pet over for a high-level reward. The use of clicker training can be particularly effective to mark and capture the "drop" behavior. After a few sessions try and anticipate when the pet is about to drop the toy, say "Drop" just in advance and reward immediately with "Good drop" or a click and food reward.

C.17 Teaching a dog to fetch and drop objects on command (client handout #7, printable version available online)—cont'd

Drop it – other items

Once the pet learns the “Drop it” command during play, the command can be used whenever it has anything in its mouth. The transition from dropping toys during fetch to dropping more desirable items, like raw hide or food wrappers, should be made very gradually. Rank the pet’s toys from the least desirable to most desirable.

When you notice that the pet has the least desirable toy in its mouth, ask it to drop it using a command and hand signal. Praise it or give a small food reward, then ask it to sit and return the toy to the pet. When you find that it drops that toy readily, move to the next toy in the rank, and so forth. Be sure always to use an upbeat tone of voice and make the training fun. Practice is very important. The pet needs to drop something on command at least several times each day if you expect to be able to get to the point where it will drop special items like food wrappers and dead birds on command.

C.18 Feline housesoiling therapy worksheet (form #8, printable version available online)

Consultation: Housecall / Office / Phone

Owner: _____ **Pet:** _____ **Date:** _____

Medical

_____ Medical health _____

_____ Lab tests _____

_____ Medication / Feliway _____

General

_____ Reduce anxiety/conflict stress _____ Keep a diary

_____ Avoid punishment (no hitting, yell) _____ Interrupt in act _____ Take or follow to litter and reward

_____ Remove odor _____ Identify soiling cat _____

_____ Environmental enrichment _____ Reward train _____ Play enrich _____ Avoid stressors _____ 3D space

Supervision/confinement

_____ Length of time: _____ weeks _____ Area of house: _____ Cage _____

_____ Bell on the cat to aid supervision _____ Harness on cat to aid supervision

_____ Prevent access to soiled areas or objects _____ Prevent access to stimuli that trigger housesoiling

Safeguard previously soiled areas

Change the function of areas:

_____ Food bowls _____ Bedding _____ Play area _____ Scratching post

Alter desirability of areas:

_____ Double-stick tape _____ Citrus product / deodorant _____ Cologne/perfume

_____ Home-made booby traps _____ Motion-activated alarm _____ Motion-activated spray

_____ Cat repellents _____ Moth balls

_____ Cover furniture or floors with: _____ upside-down vinyl carpet runner _____ plastic _____ foil _____

_____ Fill bathtub _____ sink _____ other _____ with water, ping pong balls

_____ Double-sided tape Other: _____

C.18 Feline housesoiling therapy worksheet (form #8, printable version available online)— cont'd

Prevent access to area

_____ Close off frequently soiled rooms _____ Take up rugs _____ Move furniture

Litterbox

_____ Clean frequently _____ Self-cleaning litterbox

_____ Increase number to _____ boxes _____ Change locations _____ More locations

_____ Use empty litterbox or food tray _____ Use litter on only one side of litterbox

_____ Offer litter: _____ clumping _____ sand _____ dirt _____ paper _____ sawdust _____ cedar _____ carpet _____
clay _____ peat moss / leaves

_____ wheat _____ brand of litter _____ Litter attractants

_____ Offer different boxes: _____ covered _____ uncovered _____ low sides _____ higher sides _____ larger

Miscellaneous

_____ Prevent access to stimuli _____ Remove strays _____ Block visual sites _____ Booby trap sites

_____ Discourage visiting animals (_____ sprinkler _____ spray device _____ repellent / odor _____ odor removal)

_____ When stressful situations are anticipated: _____ confine _____ supervise _____ increase playtime

Assessment

Initiating factors _____

Maintaining factors _____

Diagnosis/prognosis

C.19 Basket muzzle conditioning (client handout #27, printable version available online)

1. Start by sitting in a chair and ask your dog to sit in front of you. Do not bend down, over, or toward the dog.
2. Smear the inside of the basket muzzle with a small amount of dog food, cheese spread, meat spread, squeeze cheese, or peanut butter. Hold the muzzle and let the dog lick it out.
3. When your dog has licked the muzzle clean, put more treats in and continue. When your dog is pushing its nose into the muzzle immediately to get the food, go to the next step.
4. Allow the pet to lick food out of the muzzle. While your dog is licking the food out, gently put the straps around the head and hold them there for less than 3 seconds while your dog eats. If your dog backs away, pull the muzzle toward you slightly and offer it again. Do not push the muzzle toward your dog.
5. Over multiple sessions, slowly increase the amount of time that you hold the straps and slowly progress to buckling and securing the muzzle.
6. Once you can buckle the muzzle, continue to feed your dog by pushing food through the openings of the muzzle for a few more seconds, then remove it.
7. Over the course of many sessions, gradually increase the time that your dog is wearing the muzzle.
8. The goal is for your dog to wear it for 10–15 minutes at home before you use it in stressful situations.

Appendix D Drug dosages

Before using any of the following drugs or supplements, please refer to Chapters 8 and 9 for further details about indications, contraindications, and potential adverse effects. Although many of these drugs have been used in veterinary medicine for either behavioral or medical indications (or both), very few have been studied in dogs and cats and even fewer are labeled for veterinary use. Of even greater concern is the combination of drugs and the potential for enhancing therapeutic effect which must be weighed against the possibility of adverse drug interactions, some of which are known and some of which are theorized. Drug combinations and the potential for beneficial and harmful interactions are also discussed in [Chapter 8](#).

In this dosage chart you will find one or more doses for each medication. The doses most commonly reported by our colleagues in veterinary behavior and for which there is a published reference will be listed first to give practitioners a conservative dose guideline with which to work. However, when a broader dose range has been reported this will be designated as RDR (reported dose range) and listed below the “standard” dose range (SDR). Of course, except for drugs licensed for veterinary use and whose pharmacokinetics have been studied, and dose range published, even the “standard range” is often based on no more than case studies or anecdotal reports. Because of this, it is always recommended to use products labeled for veterinary use as first-line therapy whenever possible. It is also important to note that there are likely breed and individual differences, medical conditions, and the concurrent use of other drugs that will require dose adjustments or discontinuation in some individuals. Therefore, pet owners should be advised of the expected

therapeutic effects and side-effects that might be expected and to report immediately any unexpected change in health or behavior.

Finally, it is the practitioner’s responsibility to know the local regulations regarding off-label dispensing and to have appropriate consent or release forms signed. A sample release form can be found in [Appendix C](#) form [C.9](#), available online as client form #5.

References

- Drug doses can be found in the following references and in the articles referenced throughout [Chapter 8](#). Doses that have been obtained from other sources are listed:
- Beaver BV. Canine behavior: insights and answers, 2nd ed. Philadelphia, PA: Saunders Elsevier; 2009.
- Beaver BV. Feline behavior: a guide for veterinarians, 2nd ed. St. Louis, MO: Saunders; 2003.
- Crowell-Davis S. Veterinary psychopharmacology. Hoboken, NJ: Blackwell Publishing; 2005.
- Crowell-Davis S, Landsberg GM. Pharmacology and pheromone therapy. In: Horwitz DF, Mills DS editors. BSAVA manual of canine and feline behavioural medicine, 2nd ed. Gloucester, UK: BSAVA; 2009.
- Dramard V. Vade mecum de pathologie du comportement du chien et du chat, 2nd ed. Med’Com, Paris, 2007.
- Kuehn NE. North American companion animal formulary, 9th edn. North American Compendiums, Port Huron, MI, 2010.
- Plumb D. Plumb’s veterinary drug handbook, 7th edn. Ames, Iowa: Wiley Blackwell; 2011.
- All dosing is per os unless otherwise indicated.

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
Anticonvulsants		Seizures (temporal, limbic)		
		Focal (partial) seizures with behavior signs		
	Phenobarbital	Seizures (temporal, limbic)	SDR 2–5 mg/kg q12h RDR up to 10 mg/kg for sedation	1–3 mg/kg q12h
		Sedative/hypnotic		
		Feline vocalization		
		Feline hyperesthesia		
	Potassium bromide	Seizures	20–40 mg daily or divided q12h	
		REM sleep disorders		

Continued

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Carbamazepine	Seizures (adjunctive therapy)	SDR 4–8 mg/kg q8–12h RDR 20–40 mg/kg/day divided in 2 doses (Pageat)	2–6 mg/kg q12h
		Explosive aggression – dogs		
		Aggression – cats		
		Anxiety disorders		
		Chronic/neuropathic pain		
		Compulsive – tail chase, spin		
		Mood regulation		
		Sociopathies Dyssocialization		
		Antiprodigious		
	Gabapentin	Chronic/neuropathic pain – self-trauma	10–30 mg/kg q8–12h	SDR 3–10 mg/kg q8h–12h RDR: up to 30 mg q8h
		Seizures		
		Anxiety		
	Levetiracetam	Seizures	20 mg/kg q8h and slowly increase to effect	10–20 mg/kg q8h and slowly increase to effect
		Partial seizures		
	Pregabalin	Neuropathic pain	2–4 mg/kg q8h	1–2 mg/kg q12h
		Seizures		
		Self-traumatic disorders		
Alpha 2 agonist	Clonidine	Anxiety, panic, phobia	0.01–0.05 mg/kg ¹ 1.5–2 hours prior to event up to twice daily	
		Adjunctive therapy as needed		
Alpha-adrenergics and sympathomimetics		Urinary incontinence		
		Excitement urination		
		Submissive urination		
	Phenylpropanolamine	As above	1.1–4.4 mg/kg q8–24h	12.5 mg q8–24h 1.1–2.2 mg/kg q8–24h
Antihistamines		Compulsive scratching		
		Self-trauma		
		Mild sedation		
		Sedation for travel		
		Waking at night		
	Hydroxyzine	As above	1–2.2 mg/kg q6–12h	1–2.2 mg/kg q8–12h
	Cetirizine	As above	2.5–10 mg total dose q24h	2.5–5mg total dose q24h
	Chlorpheniramine	As above	2–8 mg /dog q8–12h 0.2–0.8 mg/kg q8–12h	1–2 mg/cat q12h SDR: 4 mg/cat q12h
	Diphenhydramine	As above	2–4 mg/kg q8–12h	2–4 mg/kg q8–12h
	Trimeprazine	As above	0.5–2.0 mg/kg q12h	
	Cyproheptadine	Serotonin antagonist	0.3–2.0 mg/kg q12h	0.5–2 mg/cat –q12–24h SDR: 4 mg/cat q12h
		Antihistaminic		
		Appetite stimulant		

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
Azapirones	Buspirone	Ongoing use for mild anxiety	0.5–2.0 mg/kg q8–12h	0.5–1.0 mg/kg q12–24h SDR: 7.5 mg/cat q12h
		Chronic fears/anxiety		
		Feline urine marking		
		Aggression (caution: may disinhibit)		
		Relatively wide margin of safety		
Benzodiazepines		Anxiety disorders		
		Sleep/hypnosis		
		As needed prior to anxiety-evoking event		
		Feline aggression		
		Urine marking		
		Seizures		
		Hyperesthesia		
		Caution re: potential disinhibition– caution re: liver		
	Clorazepate	As benzodiazepine above	SDR 0.5–2 mg/kg q8–12h RDR up to 4 mg/kg q8 or prn	SDR 0.2–0.5 mg/kg q12–24h RDR: up to 2.2 mg/kg q12–24h
		Adjunctive seizure control		
		Focal (partial) seizures		
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
	Alprazolam	As benzodiazepine above except seizures	SDR 0.02–0.1 mg/kg prn to q6h RDR up to q4h	0.125–0.25 mg/cat q8–24h 0.02–0.1 mg/kg q8h
		Anxiety-related behavior problems		
		Short-term prior to fear, phobic, panic-evoking event		
	Lorazepam	As benzodiazepine above	SDR 0.02–0.1 mg/kg q8–24h RDR: up to 0.5 mg/kg q8h	SDR 0.125–0.25 mg/cat q12–24h RDR: up to 0.25 mg/kg q12–24h
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
	Diazepam	As benzodiazepine above	0.5–2.2 mg/kg prn to q4h 2 mg/kg rectal (for status epilepticus, may be effective for panic/phobic state)	SDR 0.2–0.5 mg/kg q8–12h DR: RDR mg/kg q8–12h Avoid in cats or monitor for hepatotoxicity
		Appetite stimulant		
	Flurazepam	Appetite stimulant	0.1–0.5 mg/kg prn to q12h	0.1–0.2 mg/kg q12–24h
		Sleep – night waking		
	Oxazepam	As benzodiazepine above except seizures	SDR 0.2–1 mg/kg q12–24h RDR up to 0.5 mg/kg q6h	0.2–0.5 mg/kg q12–24h RDR: up to 1 mg/kg q12h
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
		Appetite stimulant		
	Triazolam	Aggression in cats	0.01–0.1 mg/kg q12h or prn	0.03 mg/cat q12h 2.5–5 mg/cat q8h
		Sleep – night waking		

Continued

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Clonazepam	As benzodiazepine above	SDR 0.1–1.0 mg/kg q8–12h – sleep disorder 0.02 mg/kg before sleep RDR 2 mg/kg q12h (seizure)	SDR 0.05–0.25 mg/kg q8h–24h – sleep disorder 0.02 mg/kg before sleep RDR: up to 0.5 mg/kg q8h–12h (seizure dose)
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
		Sleep disorder		
		Seizure/partial seizure-related behavior		
		Hyperesthesia		
	Chlordiazepoxide	As benzodiazepine above except seizures	2–6.6 mg/kg prn to tid	0.2–1.0 mg/kg q12–24h
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
	Chlordiazepoxide/ clidinium	Stress colitis – irritable bowel	SDR 0.1–0.25 mg/kg (of clidinium) q8–12h (1–2 capsules) RDR 0.44–1.1 mg/kg (of clidinium) q8–12h	
Beta-blockers		Decrease somatic components of anxiety. Situational fears and anxiety – concurrent with psychotropic medication		
	Propranolol	As above	SDR 0.25–3.0 mg/kg q12h or prn RDR 5 mg/kg q12h	0.2–1.0 mg/kg q8h
	Pindolol	As above	0.125–0.25 mg/kg q12h	0.125–0.25 mg/kg q12h
		Acceleration of SSRI response, especially paroxetine		
Central nervous system stimulants		Narcolepsy/cataplexy		
		Hyperkinesis, impaired learning, hyperactivity, poor habituation, impaired attention span		
	Methylphenidate	Hyperkinesis	SDR 0.5–2.0 mg/kg q12h RDR to 4 mg/kg q8–12h	
		Narcolepsy/cataplexy	0.25–0.5 mg/kg q12–24h with imipramine at 0.5–1 mg/kg q8h; 5–10 mg/dog q12–24h	
	Dextroamphetamine	Test for hyperkinesis	0.2–1.3 mg/kg prn	
		Narcolepsy	5–10 mg/dog q8–24h	1.25 mg prn
	Levoamphetamine	Test for hyperkinesis	1.0–4.0 mg/kg prn	
Dopamine agonist	Cabergoline	False pregnancy	2.5–5 µg/kg q24h	5 µg/kg q24h
		Aggression related to pseudopregnancy		
		Anxiety		
		Prolactin inhibitor		
Gut microsomal triglyceride transfer inhibitor	Dirlotapide	Appetite suppression	0.05 mg/kg (0.01 mL/kg) daily for 14 days, then 0.10 mg/kg (0.02 mL/kg) daily for 14 days, then adjust as per label instructions. Maximum dose is 1.0 mg/kg (0.2 mL/kg)	Not to be used in cats

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
Hormones		Varies with hormone		
	Megestrol acetate	Aggression Feline urine marking Suppresses male behavior Behavioral calming Appetite stimulant Side-effects preclude use in most cases	SDR 1–2 mg/kg q24h for 7 days then taper to lowest effective dose after 1 week to once or twice weekly RDR 1.1–5 mg/kg q24h	SDR 0.5–1 mg/kg (maximum 5 mg per cat) q24h for 7 days then taper to lowest effective dose after 1 week to once or twice weekly RDR 10 mg/cat
	Medroxyprogesterone acetate	As above Side-effects preclude use in most cases	SDR 2.5–10 mg/kg sc up to 3–4x/year RDR 20 mg/kg im/sc	SDR 2.5–10 mg/kg sc/im up to 3x/year RDR 20 mg/kg sc/im q 4 months
	Diethylstilbestrol	Estrogen-responsive incontinence	0.1–1.0 mg/dog/day for 3–5 days then reduce to once or twice weekly	
	Testosterone propionate	Urinary incontinence in neutered males	0.5–2.2 mg/kg im q2–3 days (cyprionate 2.2 mg/kg im every 2–8 weeks)	5–10 mg im monthly or prn
	Cyproterone acetate (androgen receptor antagonist)	Heterospecific imprints – reduce sexual behavior in males (Pageat) Sociopathies (Pageat) Assessing potential effects of castration	SDR: 1.25–2.5 mg/kg per day RDR 3–5 mg/kg divided q12h (Pageat) and reduce dose weekly	
	Melatonin	Sleep disorders Fear/anxiety	SDR 1.5–6 mg q8h–24h RDR up to 12 mg q8h	SDR 1–3 mg sid–bid RDR 6–12 mg q12h
Monoamine oxidase inhibitors (MAOI)	Selegiline	Cognitive dysfunction Hypersensitivity–hyperactivity Emotional disorders Stage 3 phobias Dyssocialization (Pageat)	0.5–1 mg/kg q24h	0.5–1 mg/kg q24h
Neuroleptics/antipsychotics		Restraint/sedation Decreased vocalization Travel Sedation concurrent with anxiolytic Sedation concurrent with pain management		
	Acepromazine	Restraint/sedation – in combination with other medications for pre-op, pain, anxiety Sedation/antiemetic for travel Reduce activity	0.5–2.2 mg/kg prn to q6h	0.5–2.2 mg/kg prn to q8h
	Chlorpromazine	See acepromazine, above	0.8–3 mg/kg q8–12h	SDR 0.5–3 mg/kg q24h RDR up to 2 mg/kg q8h
	Promazine	Reduce activity Sedation	1–2 mg/kg q6h–8h or prn	
	Thioridazine	Compulsive (with motor or hallucinatory signs) Social phobia (Pageat)	SDR 1.1–2.2 mg/kg q12–24h RDR 30 mg/m ² divided q12h (Pageat)	

Continued

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Risperidone	Sociopathies	0.5–1 mg/m ² q24h (Pageat)	
		Dissociative disorders		
		Impulsive aggression		
		Hallucinatory-type signs		
	Haloperidol	Refractory compulsive (self-injurious)	SDR 1–4 mg/dog bid RDR 0.05–0.5 mg/kg q12–24h	
		Sedation		
	Pipamperone	Primary dyssocialization (in combination with clomipramine)	30–60 mg/m ² divided q12h (Pageat)	
	Lithium carbonate	Unpredictable severe aggression	3 mg/kg or 0.1 mmol/kg and titrate dose to blood levels	
		Ranges for serum therapeutic and toxic levels overlap		
		Dysthymia – unpredictable intense aggression in Cocker spaniels		
NK-1 receptor antagonist (substance P inhibitor)	Maropitant citrate	Emesis, stress-induced nausea (e.g., car ride)	2 mg/kg daily orally, or 1 mg/kg SC, for up to 5 days for acute emesis Motion sickness: 8 mg/kg po 2 hours pre travel q24h (2 consecutive days before washout); fast 1 hour prior to administration	1 mg/kg SC daily for up to 5 days ²
		Possible neurogenic pain		
N-methyl-D-aspartate antagonist	Memantine	Compulsive (adjunctive therapy)	0.3–1 mg/kg q24h	
		Pain		
		CDS (as adjunctive therapy)		
	Amantadine	Pain	3–8 mg/kg q24h or divided q12h	2.2–5 mg/kg q24h
		CDS (as adjunctive therapy)		
	Dextromethorphan		2 mg/kg q6–12h	0.5–2 mg/kg up to q8h
Opiate agonists/antagonists		Compulsive/stereotypic behaviors		
		Self-mutilation		
	Hydrocodone	Compulsive dermatologic disorders	0.25 mg/kg q8–12h	0.25 mg/kg bid – tid 1.25–5 mg/cat bid
	Naltrexone	Compulsive	SDR 1–2.2 mg/kg q12–24h RDR up to 5 mg/kg q12–24h	SDR 1–2.2 mg/kg q12–24h RDR 25–50 mg/cat q24h
Serotonin 2A antagonist/reuptake inhibitor	Trazodone	Adjunctive therapy for anxiety, e.g., noise, storm, separation anxiety before exposure or up to tid	SDR 2–3 mg/kg prn to q8h RDR up to 10 mg/kg prn to q8h Maximum 300 mg/dose ^{3,4}	
SSRIs		Compulsive disorders		
		Aggression (impulsive, uninhibited, intense)		
		Phobias, anxiety disorders (intermittent, recurrent, or chronic)		
		Feline urine marking		
		Hypersensitivity–hyperactivity (French)		
		Sociopathies (French)		

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Fluoxetine	See SSRIs, above	SDR 1.0–2.0 mg/kg q24h RDR 2–4 mg/kg q24h	SDR 0.5–1.0 mg/kg q24h RDR up to 1.5 mg/kg q24h
		Separation anxiety*		
		Fear, anxiety with hyperactivity, aggression		
	Sertraline	See SSRIs, above	SDR 1–3 mg/kg q24h or divided q12h RDR up to 5 mg/kg q24h or divided q12h	0.5–1.5 mg/kg q24h
		Panic, generalized anxiety, fear		
	Paroxetine	See SSRIs, above	SDR 0.5–2 mg/kg q24h RDR to 3 mg/kg q24h	SDR 0.5–1.0 mg/kg q24h RDR up to 1.5 mg/kg q24h
		Social anxiety, panic, mood elevation		
	Fluvoxamine	See SSRIs, above	1–2 mg/kg q12–24h	0.25–1 mg/kg q24h
		Fear, anxiety with hyperactivity, aggression		
	Citalopram	See SSRIs, above	SDR 1 mg/kg q24h RDR 2–4 mg/kg q24h	0.5–1.0 mg/kg q24h
		Social impulsivity, aggression		
Tetracyclic antidepressant	Mianserin	Hypersensitivity–hyperactivity syndrome	SDR: 1–2.5 mg/kg q12h (Pageat) RDR: up to 5 mg/kg q12h (Pageat)	
		Stage 2 phobias		
		Chronic depression		
		Anorexia		
	Mirtazapine	Appetite stimulant	0.6 mg/kg (maximum of 30 mg/day)	SDR 3.75 mg q72h RDR 1.88 mg/kg daily ⁵
		Sleep – insomnia		
		Anxiety?		
Tricyclic antidepressants		Varies between drugs in this class		
		Anxiety-related behavior problems (intermittent and recurrent or chronic) with signs of noise aversion and overreactivity to stimuli		
		Feline urine marking		
		Enuresis		
		Mood-stabilizing – some forms of aggression		
		Possible effects on neuropathic pain		
	Amitriptyline	As above	SDR 1–2 mg/kg q12h RDR up to 6 mg/kg q12h	SDR: 0.5–1.0 mg/kg/day RDR: up to 2 mg/kg q24h
		Fear/anxiety		
	Clomipramine	Compulsive behaviors	SDR 1–2 mg/kg q12h RDR up to 3 mg/kg q12h	0.25–1 mg/kg q24h
		Anxiety disorders		
		Separation anxiety*		
		Noise phobias		
		Urine marking (cats)		
	Desipramine	Cataplexy	1.5–3 mg/kg q24h to bid	
		Hyperactivity		
		Anxiety		

Continued

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Doxepin	Antihistaminic effects	2–5 mg/kg q8–12h SDR: 0.5–10 mg/kg q12–24h	0.5–1.0 mg/kg q12–24h
		Pruritus – self-trauma		
		Anxiety		
	Imipramine	Enuresis	1.0–4.4 mg/kg q12–24h	0.5–1 mg/kg q12–24h
		Narcolepsy/cataplexy (peak effect 1–2 hours)		
		Fear/anxiety		
	Protriptyline	Narcoleptic hypersomnia (e.g., Labrador retrievers)	5–10 mg q12–24h (narcolepsy) RDR: 0.2–0.5 mg/kg q12–24h	0.5–1 mg/kg q12–24h
		Cataplexy		
	Nortriptyline	Narcolepsy/cataplexy Fear/anxiety	0.5–2 mg/kg q12h	0.5–2 mg/kg q12–24h
Xanthine derivatives	Propentofylline	Cognitive dysfunction (mental dullness)	2.5–5 mg/kg q12h	
Supplements	SAMe	Mood disorders, cognitive dysfunction, liver disease	10–20 mg/kg q24h	100 mg/cat q24h
	Alpha-casozepine	Anxiety	Minimum: 15 mg /kg divided up to 25–30 mg/kg q24h	Minimum: 15 mg/kg q24h
	L-theanine (suntheanine)	Anxiety	2.5–5 mg/kg q12h	25 mg/cat q12h
	L-tryptophan	Possible decrease in anxiety/aggression in combination with low-protein food or combined with other natural ingredients such as alpha-casozepine and vitamin B6 (Royal Canin Calm) Social anxiety May increase serotonin pool when treating with SSRI (caution re: serotonin syndrome)	2–15 mg /kg q24h	12.5 mg/kg q24h
	5 hydroxytryptophan	See L-tryptophan, above	2 mg/kg q12h	
	Hormonease (magnolia, phelodendron 500 mg, honokiol 9.5 mg)	Anxiety	<22 kg: ½ tablet q24h >22 kg: 1 tablet q24h	

*Veterinary-licensed for the treatment of separation anxiety with concurrent behavior modification.

prn, as needed, q24h = sid, once per day; q12h = bid, twice per day, or every 12 hours; q8h = tid, every 8 hours or three times per day; q6h = qid, every 6 hours or four times per day; sc, subcutaneously; im, intramuscularly; po, orally; DR, dose range published by other authors; REM, rapid-eye-movement; SSRI, selective serotonin reuptake inhibitor; CDS, cognitive dysfunction syndrome; SAMe, S-adenosyl-L-methionine.

1.Ogata N, Dodman NH. The use of clonidine in the treatment of fear-based behavior problems in dogs: an open trial. J Vet Behav 2011;6:130–7.

2.Hickman MA, Cox SR, Mahabir S, et al. Safety, pharmacokinetics and use of novel NK-1 receptor antagonist maropitant (Cerenia) for the prevention of emesis and motion sickness in cats. J Vet Pharmacol Ther 2008;31:220–9.

3.Sherman BL, Mills DS. Canine anxieties and phobias: an update on separation anxiety and noise aversions. Vet Clin North Am Sm Anim Pract 2008;38:1081–110.

4.Gruen ME, Sherman BL. Use of trazodone as an adjunctive agent in the treatment of canine anxiety disorders: 56 cases (1995–2007). J Am Vet Med Assoc 2008;233:1902–7.

5.Quimby JM, Gustafson DL, Samber BJ, et al. Studies on the pharmacokinetics of mirtazapine in healthy young cats. J Vet Pharmacol Ther 2011;34:388–96.

Appendix D Drug dosages

Before using any of the following drugs or supplements, please refer to Chapters 8 and 9 for further details about indications, contraindications, and potential adverse effects. Although many of these drugs have been used in veterinary medicine for either behavioral or medical indications (or both), very few have been studied in dogs and cats and even fewer are labeled for veterinary use. Of even greater concern is the combination of drugs and the potential for enhancing therapeutic effect which must be weighed against the possibility of adverse drug interactions, some of which are known and some of which are theorized. Drug combinations and the potential for beneficial and harmful interactions are also discussed in [Chapter 8](#).

In this dosage chart you will find one or more doses for each medication. The doses most commonly reported by our colleagues in veterinary behavior and for which there is a published reference will be listed first to give practitioners a conservative dose guideline with which to work. However, when a broader dose range has been reported this will be designated as RDR (reported dose range) and listed below the “standard” dose range (SDR). Of course, except for drugs licensed for veterinary use and whose pharmacokinetics have been studied, and dose range published, even the “standard range” is often based on no more than case studies or anecdotal reports. Because of this, it is always recommended to use products labeled for veterinary use as first-line therapy whenever possible. It is also important to note that there are likely breed and individual differences, medical conditions, and the concurrent use of other drugs that will require dose adjustments or discontinuation in some individuals. Therefore, pet owners should be advised of the expected

therapeutic effects and side-effects that might be expected and to report immediately any unexpected change in health or behavior.

Finally, it is the practitioner’s responsibility to know the local regulations regarding off-label dispensing and to have appropriate consent or release forms signed. A sample release form can be found in [Appendix C](#) form [C.9](#), available online as client form #5.

References

- Drug doses can be found in the following references and in the articles referenced throughout [Chapter 8](#). Doses that have been obtained from other sources are listed:
- Beaver BV. Canine behavior: insights and answers, 2nd ed. Philadelphia, PA: Saunders Elsevier; 2009.
- Beaver BV. Feline behavior: a guide for veterinarians, 2nd ed. St. Louis, MO: Saunders; 2003.
- Crowell-Davis S. Veterinary psychopharmacology. Hoboken, NJ: Blackwell Publishing; 2005.
- Crowell-Davis S, Landsberg GM. Pharmacology and pheromone therapy. In: Horwitz DF, Mills DS editors. BSAVA manual of canine and feline behavioural medicine, 2nd ed. Gloucester, UK: BSAVA; 2009.
- Dramard V. Vade mecum de pathologie du comportement du chien et du chat, 2nd ed. Med’Com, Paris, 2007.
- Kuehn NE. North American companion animal formulary, 9th edn. North American Compendiums, Port Huron, MI, 2010.
- Plumb D. Plumb’s veterinary drug handbook, 7th edn. Ames, Iowa: Wiley Blackwell; 2011.
- All dosing is per os unless otherwise indicated.

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
Anticonvulsants		Seizures (temporal, limbic)		
		Focal (partial) seizures with behavior signs		
	Phenobarbital	Seizures (temporal, limbic)	SDR 2–5 mg/kg q12h RDR up to 10 mg/kg for sedation	1–3 mg/kg q12h
		Sedative/hypnotic		
		Feline vocalization		
		Feline hyperesthesia		
	Potassium bromide	Seizures	20–40 mg daily or divided q12h	
		REM sleep disorders		

Continued

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Carbamazepine	Seizures (adjunctive therapy)	SDR 4–8 mg/kg q8–12h RDR 20–40 mg/kg/day divided in 2 doses (Pageat)	2–6 mg/kg q12h
		Explosive aggression – dogs		
		Aggression – cats		
		Anxiety disorders		
		Chronic/neuropathic pain		
		Compulsive – tail chase, spin		
		Mood regulation		
		Sociopathies Dyssocialization		
		Antiprodigious		
	Gabapentin	Chronic/neuropathic pain – self-trauma	10–30 mg/kg q8–12h	SDR 3–10 mg/kg q8h–12h RDR: up to 30 mg q8h
		Seizures		
		Anxiety		
	Levetiracetam	Seizures	20 mg/kg q8h and slowly increase to effect	10–20 mg/kg q8h and slowly increase to effect
		Partial seizures		
	Pregabalin	Neuropathic pain	2–4 mg/kg q8h	1–2 mg/kg q12h
		Seizures		
		Self-traumatic disorders		
Alpha 2 agonist	Clonidine	Anxiety, panic, phobia	0.01–0.05 mg/kg ¹ 1.5–2 hours prior to event up to twice daily	
		Adjunctive therapy as needed		
Alpha-adrenergics and sympathomimetics		Urinary incontinence		
		Excitement urination		
		Submissive urination		
	Phenylpropanolamine	As above	1.1–4.4 mg/kg q8–24h	12.5 mg q8–24h 1.1–2.2 mg/kg q8–24h
Antihistamines		Compulsive scratching		
		Self-trauma		
		Mild sedation		
		Sedation for travel		
		Waking at night		
	Hydroxyzine	As above	1–2.2 mg/kg q6–12h	1–2.2 mg/kg q8–12h
	Cetirizine	As above	2.5–10 mg total dose q24h	2.5–5mg total dose q24h
	Chlorpheniramine	As above	2–8 mg /dog q8–12h 0.2–0.8 mg/kg q8–12h	1–2 mg/cat q12h SDR: 4 mg/cat q12h
	Diphenhydramine	As above	2–4 mg/kg q8–12h	2–4 mg/kg q8–12h
	Trimeprazine	As above	0.5–2.0 mg/kg q12h	
	Cyproheptadine	Serotonin antagonist	0.3–2.0 mg/kg q12h	0.5–2 mg/cat –q12–24h SDR: 4 mg/cat q12h
		Antihistaminic		
		Appetite stimulant		

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
Azapirones	Buspirone	Ongoing use for mild anxiety	0.5–2.0 mg/kg q8–12h	0.5–1.0 mg/kg q12–24h SDR: 7.5 mg/cat q12h
		Chronic fears/anxiety		
		Feline urine marking		
		Aggression (caution: may disinhibit)		
		Relatively wide margin of safety		
Benzodiazepines		Anxiety disorders		
		Sleep/hypnosis		
		As needed prior to anxiety-evoking event		
		Feline aggression		
		Urine marking		
		Seizures		
		Hyperesthesia		
		Caution re: potential disinhibition– caution re: liver		
	Clorazepate	As benzodiazepine above	SDR 0.5–2 mg/kg q8–12h RDR up to 4 mg/kg q8 or prn	SDR 0.2–0.5 mg/kg q12–24h RDR: up to 2.2 mg/kg q12–24h
		Adjunctive seizure control		
		Focal (partial) seizures		
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
	Alprazolam	As benzodiazepine above except seizures	SDR 0.02–0.1 mg/kg prn to q6h RDR up to q4h	0.125–0.25 mg/cat q8–24h 0.02–0.1 mg/kg q8h
		Anxiety-related behavior problems		
		Short-term prior to fear, phobic, panic-evoking event		
	Lorazepam	As benzodiazepine above	SDR 0.02–0.1 mg/kg q8–24h RDR: up to 0.5 mg/kg q8h	SDR 0.125–0.25 mg/cat q12–24h RDR: up to 0.25 mg/kg q12–24h
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
	Diazepam	As benzodiazepine above	0.5–2.2 mg/kg prn to q4h 2 mg/kg rectal (for status epilepticus, may be effective for panic/phobic state)	SDR 0.2–0.5 mg/kg q8–12h DR: RDR mg/kg q8–12h Avoid in cats or monitor for hepatotoxicity
		Appetite stimulant		
	Flurazepam	Appetite stimulant	0.1–0.5 mg/kg prn to q12h	0.1–0.2 mg/kg q12–24h
		Sleep – night waking		
	Oxazepam	As benzodiazepine above except seizures	SDR 0.2–1 mg/kg q12–24h RDR up to 0.5 mg/kg q6h	0.2–0.5 mg/kg q12–24h RDR: up to 1 mg/kg q12h
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
		Appetite stimulant		
	Triazolam	Aggression in cats	0.01–0.1 mg/kg q12h or prn	0.03 mg/cat q12h 2.5–5 mg/cat q8h
		Sleep – night waking		

Continued

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Clonazepam	As benzodiazepine above	SDR 0.1–1.0 mg/kg q8–12h – sleep disorder 0.02 mg/kg before sleep RDR 2 mg/kg q12h (seizure)	SDR 0.05–0.25 mg/kg q8h–24h – sleep disorder 0.02 mg/kg before sleep RDR: up to 0.5 mg/kg q8h–12h (seizure dose)
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
		Sleep disorder		
		Seizure/partial seizure-related behavior		
		Hyperesthesia		
	Chlordiazepoxide	As benzodiazepine above except seizures	2–6.6 mg/kg prn to tid	0.2–1.0 mg/kg q12–24h
		Anxiety-related behavior problems		
		Short-term prior to fear-evoking event		
	Chlordiazepoxide/ clidinium	Stress colitis – irritable bowel	SDR 0.1–0.25 mg/kg (of clidinium) q8–12h (1–2 capsules) RDR 0.44–1.1 mg/kg (of clidinium) q8–12h	
Beta-blockers		Decrease somatic components of anxiety. Situational fears and anxiety – concurrent with psychotropic medication		
	Propranolol	As above	SDR 0.25–3.0 mg/kg q12h or prn RDR 5 mg/kg q12h	0.2–1.0 mg/kg q8h
	Pindolol	As above	0.125–0.25 mg/kg q12h	0.125–0.25 mg/kg q12h
		Acceleration of SSRI response, especially paroxetine		
Central nervous system stimulants		Narcolepsy/cataplexy		
		Hyperkinesis, impaired learning, hyperactivity, poor habituation, impaired attention span		
	Methylphenidate	Hyperkinesis	SDR 0.5–2.0 mg/kg q12h RDR to 4 mg/kg q8–12h	
		Narcolepsy/cataplexy	0.25–0.5 mg/kg q12–24h with imipramine at 0.5–1 mg/kg q8h; 5–10 mg/dog q12–24h	
	Dextroamphetamine	Test for hyperkinesis	0.2–1.3 mg/kg prn	
		Narcolepsy	5–10 mg/dog q8–24h	1.25 mg prn
	Levoamphetamine	Test for hyperkinesis	1.0–4.0 mg/kg prn	
Dopamine agonist	Cabergoline	False pregnancy	2.5–5 µg/kg q24h	5 µg/kg q24h
		Aggression related to pseudopregnancy		
		Anxiety		
		Prolactin inhibitor		
Gut microsomal triglyceride transfer inhibitor	Dirlotapide	Appetite suppression	0.05 mg/kg (0.01 mL/kg) daily for 14 days, then 0.10 mg/kg (0.02 mL/kg) daily for 14 days, then adjust as per label instructions. Maximum dose is 1.0 mg/kg (0.2 mL/kg)	Not to be used in cats

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
Hormones		Varies with hormone		
	Megestrol acetate	Aggression	SDR 1–2 mg/kg q24h for 7 days then taper to lowest effective dose after 1 week to once or twice weekly RDR 1.1–5 mg/kg q24h	SDR 0.5–1 mg/kg (maximum 5 mg per cat) q24h for 7 days then taper to lowest effective dose after 1 week to once or twice weekly RDR 10 mg/cat
		Feline urine marking		
		Suppresses male behavior		
		Behavioral calming		
		Appetite stimulant		
		Side-effects preclude use in most cases		
	Medroxyprogesterone acetate	As above	SDR 2.5–10 mg/kg sc up to 3–4x/year RDR 20 mg/kg im/sc	SDR 2.5–10 mg/kg sc/im up to 3x/year RDR 20 mg/kg sc/im q 4 months
		Side-effects preclude use in most cases		
	Diethylstilbestrol	Estrogen-responsive incontinence	0.1–1.0 mg/dog/day for 3–5 days then reduce to once or twice weekly	
	Testosterone propionate	Urinary incontinence in neutered males	0.5–2.2 mg/kg im q2–3 days (cyprionate 2.2 mg/kg im every 2–8 weeks)	5–10 mg im monthly or prn
	Cyproterone acetate (androgen receptor antagonist)	Heterospecific imprints – reduce sexual behavior in males (Pageat)	SDR: 1.25–2.5 mg/kg per day RDR 3–5 mg/kg divided q12h (Pageat) and reduce dose weekly	
		Sociopathies (Pageat)		
		Assessing potential effects of castration		
	Melatonin	Sleep disorders	SDR 1.5–6 mg q8h–24h RDR up to 12 mg q8h	SDR 1–3 mg sid–bid RDR 6–12 mg q12h
		Fear/anxiety		
Monoamine oxidase inhibitors (MAOI)	Selegiline	Cognitive dysfunction	0.5–1 mg/kg q24h	0.5–1 mg/kg q24h
		Hypersensitivity–hyperactivity		
		Emotional disorders		
		Stage 3 phobias		
		Dyssocialization (Pageat)		
Neuroleptics/antipsychotics		Restraint/sedation		
		Decreased vocalization		
		Travel		
		Sedation concurrent with anxiolytic		
		Sedation concurrent with pain management		
	Acepromazine	Restraint/sedation – in combination with other medications for pre-op, pain, anxiety	0.5–2.2 mg/kg prn to q6h	0.5–2.2 mg/kg prn to q8h
		Sedation/antiemetic for travel		
		Reduce activity		
	Chlorpromazine	See acepromazine, above	0.8–3 mg/kg q8–12h	SDR 0.5–3 mg/kg q24h RDR up to 2 mg/kg q8h
	Promazine	Reduce activity	1–2 mg/kg q6h–8h or prn	
		Sedation		
	Thioridazine	Compulsive (with motor or hallucinatory signs)	SDR 1.1–2.2 mg/kg q12–24h RDR 30 mg/m ² divided q12h (Pageat)	
		Social phobia (Pageat)		

Continued

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Risperidone	Sociopathies	0.5–1 mg/m ² q24h (Pageat)	
		Dissociative disorders		
		Impulsive aggression		
		Hallucinatory-type signs		
	Haloperidol	Refractory compulsive (self-injurious)	SDR 1–4 mg/dog bid RDR 0.05–0.5 mg/kg q12–24h	
		Sedation		
	Pipamperone	Primary dyssocialization (in combination with clomipramine)	30–60 mg/m ² divided q12h (Pageat)	
	Lithium carbonate	Unpredictable severe aggression	3 mg/kg or 0.1 mmol/kg and titrate dose to blood levels	
		Ranges for serum therapeutic and toxic levels overlap		
		Dysthymia – unpredictable intense aggression in Cocker spaniels		
NK-1 receptor antagonist (substance P inhibitor)	Maropitant citrate	Emesis, stress-induced nausea (e.g., car ride)	2 mg/kg daily orally, or 1 mg/kg SC, for up to 5 days for acute emesis Motion sickness: 8 mg/kg po 2 hours pre travel q24h (2 consecutive days before washout); fast 1 hour prior to administration	1 mg/kg SC daily for up to 5 days ²
		Possible neurogenic pain		
N-methyl-D-aspartate antagonist	Memantine	Compulsive (adjunctive therapy)	0.3–1 mg/kg q24h	
		Pain		
		CDS (as adjunctive therapy)		
	Amantadine	Pain	3–8 mg/kg q24h or divided q12h	2.2–5 mg/kg q24h
		CDS (as adjunctive therapy)		
	Dextromethorphan		2 mg/kg q6–12h	0.5–2 mg/kg up to q8h
Opiate agonists/antagonists		Compulsive/stereotypic behaviors		
		Self-mutilation		
	Hydrocodone	Compulsive dermatologic disorders	0.25 mg/kg q8–12h	0.25 mg/kg bid – tid 1.25–5 mg/cat bid
	Naltrexone	Compulsive	SDR 1–2.2 mg/kg q12–24h RDR up to 5 mg/kg q12–24h	SDR 1–2.2 mg/kg q12–24h RDR 25–50 mg/cat q24h
Serotonin 2A antagonist/reuptake inhibitor	Trazodone	Adjunctive therapy for anxiety, e.g., noise, storm, separation anxiety before exposure or up to tid	SDR 2–3 mg/kg prn to q8h RDR up to 10 mg/kg prn to q8h Maximum 300 mg/dose ^{3,4}	
SSRIs		Compulsive disorders		
		Aggression (impulsive, uninhibited, intense)		
		Phobias, anxiety disorders (intermittent, recurrent, or chronic)		
		Feline urine marking		
		Hypersensitivity–hyperactivity (French)		
		Sociopathies (French)		

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Fluoxetine	See SSRIs, above	SDR 1.0–2.0 mg/kg q24h RDR 2–4 mg/kg q24h	SDR 0.5–1.0 mg/kg q24h RDR up to 1.5 mg/kg q24h
		Separation anxiety*		
		Fear, anxiety with hyperactivity, aggression		
	Sertraline	See SSRIs, above	SDR 1–3 mg/kg q24h or divided q12h RDR up to 5 mg/kg q24h or divided q12h	0.5–1.5 mg/kg q24h
		Panic, generalized anxiety, fear		
	Paroxetine	See SSRIs, above	SDR 0.5–2 mg/kg q24h RDR to 3 mg/kg q24h	SDR 0.5–1.0 mg/kg q24h RDR up to 1.5 mg/kg q24h
		Social anxiety, panic, mood elevation		
	Fluvoxamine	See SSRIs, above	1–2 mg/kg q12–24h	0.25–1 mg/kg q24h
		Fear, anxiety with hyperactivity, aggression		
	Citalopram	See SSRIs, above	SDR 1 mg/kg q24h RDR 2–4 mg/kg q24h	0.5–1.0 mg/kg q24h
		Social impulsivity, aggression		
Tetracyclic antidepressant	Mianserin	Hypersensitivity–hyperactivity syndrome	SDR: 1–2.5 mg/kg q12h (Pageat) RDR: up to 5 mg/kg q12h (Pageat)	
		Stage 2 phobias		
		Chronic depression		
		Anorexia		
	Mirtazapine	Appetite stimulant	0.6 mg/kg (maximum of 30 mg/day)	SDR 3.75 mg q72h RDR 1.88 mg/kg daily ⁵
		Sleep – insomnia		
		Anxiety?		
Tricyclic antidepressants		Varies between drugs in this class		
		Anxiety-related behavior problems (intermittent and recurrent or chronic) with signs of noise aversion and overreactivity to stimuli		
		Feline urine marking		
		Enuresis		
		Mood-stabilizing – some forms of aggression		
		Possible effects on neuropathic pain		
	Amitriptyline	As above	SDR 1–2 mg/kg q12h RDR up to 6 mg/kg q12h	SDR: 0.5–1.0 mg/kg/day RDR: up to 2 mg/kg q24h
		Fear/anxiety		
	Clomipramine	Compulsive behaviors	SDR 1–2 mg/kg q12h RDR up to 3 mg/kg q12h	0.25–1 mg/kg q24h
		Anxiety disorders		
		Separation anxiety*		
		Noise phobias		
		Urine marking (cats)		
	Desipramine	Cataplexy	1.5–3 mg/kg q24h to bid	
		Hyperactivity		
		Anxiety		

Continued

Class	Drug	Indications/comments	Dosage (dog)	Dosage (cat)
	Doxepin	Antihistaminic effects	2–5 mg/kg q8–12h SDR: 0.5–10 mg/kg q12–24h	0.5–1.0 mg/kg q12–24h
		Pruritus – self-trauma		
		Anxiety		
	Imipramine	Enuresis	1.0–4.4 mg/kg q12–24h	0.5–1 mg/kg q12–24h
		Narcolepsy/cataplexy (peak effect 1–2 hours)		
		Fear/anxiety		
	Protriptyline	Narcoleptic hypersomnia (e.g., Labrador retrievers)	5–10 mg q12–24h (narcolepsy) RDR: 0.2–0.5 mg/kg q12–24h	0.5–1 mg/kg q12–24h
		Cataplexy		
	Nortriptyline	Narcolepsy/cataplexy Fear/anxiety	0.5–2 mg/kg q12h	0.5–2 mg/kg q12–24h
Xanthine derivatives	Propentofylline	Cognitive dysfunction (mental dullness)	2.5–5 mg/kg q12h	
Supplements	SAMe	Mood disorders, cognitive dysfunction, liver disease	10–20 mg/kg q24h	100 mg/cat q24h
	Alpha-casozepine	Anxiety	Minimum: 15 mg /kg divided up to 25–30 mg/kg q24h	Minimum: 15 mg/kg q24h
	L-theanine (suntheanine)	Anxiety	2.5–5 mg/kg q12h	25 mg/cat q12h
	L-tryptophan	Possible decrease in anxiety/aggression in combination with low-protein food or combined with other natural ingredients such as alpha-casozepine and vitamin B6 (Royal Canin Calm) Social anxiety May increase serotonin pool when treating with SSRI (caution re: serotonin syndrome)	2–15 mg /kg q24h	12.5 mg/kg q24h
	5 hydroxytryptophan	See L-tryptophan, above	2 mg/kg q12h	
	Hormonease (magnolia, phelodendron 500 mg, honokiol 9.5 mg)	Anxiety	<22 kg: ½ tablet q24h >22 kg: 1 tablet q24h	

*Veterinary-licensed for the treatment of separation anxiety with concurrent behavior modification.

prn, as needed, q24h = sid, once per day; q12h = bid, twice per day, or every 12 hours; q8h = tid, every 8 hours or three times per day; q6h = qid, every 6 hours or four times per day; sc, subcutaneously; im, intramuscularly; po, orally; DR, dose range published by other authors; REM, rapid-eye-movement; SSRI, selective serotonin reuptake inhibitor; CDS, cognitive dysfunction syndrome; SAMe, S-adenosyl-L-methionine.

1.Ogata N, Dodman NH. The use of clonidine in the treatment of fear-based behavior problems in dogs: an open trial. J Vet Behav 2011;6:130–7.

2.Hickman MA, Cox SR, Mahabir S, et al. Safety, pharmacokinetics and use of novel NK-1 receptor antagonist maropitant (Cerenia) for the prevention of emesis and motion sickness in cats. J Vet Pharmacol Ther 2008;31:220–9.

3.Sherman BL, Mills DS. Canine anxieties and phobias: an update on separation anxiety and noise aversions. Vet Clin North Am Sm Anim Pract 2008;38:1081–110.

4.Gruen ME, Sherman BL. Use of trazodone as an adjunctive agent in the treatment of canine anxiety disorders: 56 cases (1995–2007). J Am Vet Med Assoc 2008;233:1902–7.

5.Quimby JM, Gustafson DL, Samber BJ, et al. Studies on the pharmacokinetics of mirtazapine in healthy young cats. J Vet Pharmacol Ther 2011;34:388–96.

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Training quiet (barking)

Training the “quiet” command

1. Training a dog to be quiet on command requires that you anticipate when the dog will bark (e.g., children playing, knocking at the door) or that you can provoke the dog to bark. Quiet training is unlikely to be effective if you begin your training when the barking is highly motivated or intense.
2. First, attempt to use a verbal command to which your dog has been trained to get a behavior, such as “come,” “sit,” or “lie down.” Use high-level rewards to reinforce the behavior if the dog is quiet.
3. If the dog does not respond to your command, interrupt the barking with a sharp noise (loud enough to startle the pet mildly without causing anxiety). As the dog stops barking, immediately say “yes” (or use a clicker) to mark the quiet behavior and then give a small tasty food reward. Repeat this step until the dog quiets reliably for rewards. Once this happens, add the word “quiet” just before the sharp noise.
4. Eventually, the word “quiet” without the noise should successfully stop the barking.
5. Another alternative is to have the dog wear a head collar with a leash attached. When the dog is barking, say “quiet” and immediately pull out and up on the leash to close the dog’s mouth. Release the pressure on the leash as soon as the dog is quiet and give favored treats as long as the dog remains quiet.

Encouraging quiet behavior

1. Watch your dog for calm, quiet behaviors and provide attention, affection, play, or food as rewards.
2. When the dog is barking do not give any attention or any form of reward until it is quiet. Mild attempts to discourage the barking may reinforce the behavior by giving the dog attention.
3. If barking cannot be successfully stopped with quiet command training, it should be ignored until the dog is quiet, and then that quiet behavior immediately reinforced.
4. Verbal corrections, yelling, punishment, or your own anxious behavior may further aggravate your dog’s barking and anxiety.
5. Use of a bark-activated device (audible alarm, citronella spray, bark-activated collar) may inhibit barking in some dogs. Once the barking stops, you should wait for 5–10 seconds of quiet behavior and give a treat, toy, or play to reward the quiet behavior and keep the dog distracted.
6. Avoid leaving dogs outdoors unsupervised if they have barking problems. The dog may be motivated to bark by passing stimuli (other dogs, strangers) or may bark to attract your attention. Going out to the dog will serve to reinforce the barking behavior. Unless you are present when the dog is barking you cannot train quiet behaviors.

Anxiety-induced barking

When barking arises out of anxiety, the first step is to seek help as to how to reduce the anxiety. Simply attempting to stop the barking is unlikely to be successful unless the underlying motivation for the barking is addressed and treated.

Training basic commands (cues)

Introduction

Obedience training is important for all dogs. The best way to get the job done is to start early in the pet's life, use positive reinforcement, and avoid punishment. This will help ensure quick learning and make the training process fun. If you begin the pet's training when it is a puppy, you'll find that early training, well-timed rewards, repetition and consistency can be a big help in establishing control, socializing your pet, preventing undesirable behaviors, and controlling unruly behaviors.

An easy, nonforce method for teaching obedience commands involves the use of small bits of food for training lures and reinforcements. Most dogs are very motivated to take food, so the best choice for a food lure is the pet's own dry food. If this is not sufficiently appealing, try small morsels of semimoist dog treats or freeze-dried chicken or liver. An excellent time to train the picky pet is just prior to its dinner time, since the dog should be hungry, more focused on the food, and quicker to respond.

You can use the food to lure the pet into the response you want as you give the command, and then the food will be given as a reward immediately following the response. One of the advantages of food lure training is that your pet will learn two cues for each command. In fact, as soon as your pet is responding to the food lure, begin to hide the food in your hand (or keep the food in your other hand) while you use the hand signal and verbal commands to cue the behavior and continue to give the rewards for success. Learning a double signal (verbal and visual) will make the pet twice as likely to respond to you. Once a behavior is learned, food rewards should gradually be used to get a longer, calmer, or more accurate behavior. You'll do this by picking only the best responses (e.g., best position, quickest response) to reward, and withholding food rewards for less exact responses during subsequent training sessions.

To help ensure that the pet learns with a minimum number of mistakes, avoid training when it seems overly energetic or has a shorter attention span. Work in a quiet area, keep the training sessions short, and stop before the dog begins ignoring commands. When the pet's response to commands becomes dependable, you can gradually take the training to environments with increasingly stronger distractions. Be patient, take your time, and make sure the pet knows one command well before proceeding to the next.

Your tone of voice is important. Use a happy tone of voice when teaching, "Come," "Sit," and "Down." An upbeat tone will help motivate the pet to move. Use a deep, commanding tone that is more likely to cause the pet to hold its place when teaching "Stay." You should avoid repeating a command over and over without getting a correct response. If you do this frequently, the pet will learn that it does not have to obey the first time you ask. Whenever you give a food reward, always say "Good dog." The pet will learn to associate the words with food and the words will eventually become a valuable secondary reinforcer to sustain the response as the food is gradually withdrawn.

Recall on command

This is a fairly straightforward command to teach. Say the dog's name so it turns and makes eye contact with you. Extend your hand toward the pet with a piece of food in it. Wave your hand with the food towards you and say, "Come" as the pet runs to you. Give the piece of food to it as you say "Good dog." Take a few steps back. Show the pet a second piece of food, say its name, and repeat the recall for food. The pet will learn two cues to come on command, a verbal cue and a visual cue. An alternate way to teach this command is to toss a piece of food so the pet moves away from you, then using your cues, call the pet back to sit, then repeat, gradually phasing out the food.

Sit on command

With the pet in a standing position, hold a small piece of food in front of its nose. In a steady, slow motion, move the food over the dog's head. The pet's nose will point up and the rear end will ease down to the floor, taking it into the sit position. Say, "Sit" as the rear hits the floor and give the food. Avoid holding the food lure too high over the head or the pet will jump up instead of sit. It won't be long before you'll notice that the dog

will go into the sit position when you sweep your hand in an upward movement, even without food. As soon as the pet learns this command, you should ask it to sit before it gets anything it wants. By doing this, you teach the pet that you have control.

Down on command

Begin this lesson with the dog sitting on a smooth surface. Quickly move a piece of food downward from in front of its nose to the floor directly next to its front paws. As the front end of your pet slides down to the floor, say "Down" and give the food. You must make sure that you keep the food on the floor close to the pet's paws. Otherwise it is likely to stand up and walk toward the food lure. Eventually, a downward sweep of your hand by itself will cause the dog to go into the down position. This command may take a little more patience and time than the first two. Only use the word "Down" when you are teaching this command. If you use the same word to tell the pet to stop jumping on people or to get down off counters and furniture, it may be confused about its meaning.

Stay on command

The "Stay" command is probably the most challenging command to teach a young dog. Don't even attempt to teach this command unless the pet is calm. A helpful strategy is to wear the dog out with a long walk or play session just prior to training.

Ask the pet to "Sit" without using a food lure. The second the pup sits, lean toward it, look it in the eye in an assertive manner, extend the palm of your hand toward it, and say "Stay" in a firm tone. Wait only 1 second, then calmly praise it while the pet is still sitting, give a release command, "OK," and hand it a small food reward. Repeat the command, adding a second to the stay following every five or more repetitions. Once the pet can stay for at least 20 seconds, you can begin working on distance. Ask the pet to "Stay," and take one step away from it. Gradually work from a 1-second to a 20-second stay at this position, then move back two steps and repeat the process. In no time at all, you will have the pet staying for longer periods at longer distances.

Common causes of failure to teach the "Stay" command include attempting to make the dog stay too long or at too far a distance too quickly, as well as attempting to get the response when the pet is too active or distracted. Try to anticipate when the pet will become bored with training and stop well before then. If the pet's eyes start to wander or it seems like it might move too early, calmly repeat "Stay" in a serious tone of voice, make strong eye contact, and lean toward it. Maintain the stay for just a few more seconds, and then quickly release the pet.

Heel on lead

The goal is to teach the pet to walk without pulling on a slack leash. Before training, try to wear the pet out with some aerobic play. The initial training should be short and held inside without distractions. Later, training can be moved to the yard, and then to sidewalks. If the pet is incorrigible about pulling, use a head halter for more control.

To get a young puppy used to its leash, put the leash on the pet and hold it loosely. Toss tiny treats on the floor one at a time ahead of the pup. Lightly hold the lead as the pup moves forward to eat each piece. Gradually apply a bit more tension on the lead. Repeat outdoors on the patio, deck, and in the yard.

Begin the heeling session by asking the pet to "Sit." Stand on the pet's right side, facing the same direction. Take the leash in your left hand, holding it about 500 cm (2 feet) from the pet. Show the pet a treat or toy held in the right hand. Say "Heel" and walk forward, keeping the pet's attention on the object in your right hand. Take a few steps, stop, ask the pet to "Sit" and reward it with the food or a pat on the head. Repeat, gradually taking more steps between each "Sit" command. Use an upbeat, animated tone to keep the pet's attention. Say "Heel" and reward the pet with praise and/or a treat whenever it walks along at the same speed and the leash is slack. If the pet begins to pull forward, immediately turn and walk in the opposite direction. When the pet catches up, ask it to "Sit" and repeat the above exercise. Once the pet does well in the home and yard, take the exercises to sidewalks in the neighborhood.

Other training options

Watch, wait, and reward

While proper timing of rewards is essential to teach the pet the desired behavior, food lures are not the only way to train. In fact, if you carefully and constantly watch your pet, at some point you'll see the puppy do the very behavior you want to reward (e.g. sit, lie down, or come). The critical issue is for you to reward the behavior immediately while the puppy needs to learn what behavior gets the reward. Therefore if a reward is given immediately and consistently every time the puppy does the desired behavior, and only when the puppy does the desired behavior, the pet will begin to repeat the behavior as soon as it learns what it needs to do to get the reward. At this point you can say the word (e.g., "Sit") just as the behavior begins. This teaches a command or cue to get the pet to start the behavior sequence that gets the reward. This same technique with immediate reward timing and repetition can be used for any behavior that you observe (come, lie down, go to your bed, drop it). For example, to teach a drop command you can follow your pet while carrying toys, and give a small treat each time the toy is released or "dropped" from the puppy's mouth. Add a cue word when you see the pet is about to drop the toy. Soon your puppy may be bringing you toys and dropping them just to get its reward, at which point you can move on to training another behavior with your rewards, such as lying down quietly or going to rest in its bed. However, for the pet to understand what behavior is getting the reward, focus on training only one behavior at a time until it is learned.

Clicker training

Another excellent way to reward desired behaviors immediately is to use clicker training, where a clicker is paired with a favored food treat. Once your dog knows that a click means that a treat is coming, you can watch closely until you see the behavior you want your dog to learn (repeat), and time the reward even more accurately by clicking as soon as you see the desired behavior and following this shortly after with a food reward. As with lure training, you can then gradually achieve more accurate responses by timing the reward for longer or better responses.

A little extra physical control – leash and head halter control

Another excellent way to help guide a pet into the behavior you want it to learn is to keep a leash attached to maneuver the pet gently into a sit, down, or come, which can then be immediately rewarded. Once successful, say the cue word just before you pull on the leash and very soon the pet should be doing the behavior with the word itself, with less and less need for the pull. Puppies and dogs that are excitable, easily distracted, or hard to get focused may respond better if a leash is used with a head halter to prompt the pet gently to get the desired outcome, e.g., sit, come. A leash and head halter or leash and front control body harness are particularly useful as aids in teaching the dog to walk on loose leash.

Regardless of how you get the desired outcome, the common element is to give the reward immediately each time you get the behavior until it is consistently repeated, and to add a cue word before the sequence so that the pet learns a word or command that is associated with the behavior so that the behavior will be repeated by the pet for a reward each time it hears the command (or sees the visual signal).

Socialization tips for puppy owners

Even though dogs have been domesticated for thousands of years, each new puppy that comes into our world must learn about humans. Socialization is the process during which puppies develop positive relationships with other living beings. The most sensitive period for successful socialization is during the first 3–4 months of life. The experiences the pet has during this time will have a major influence on its developing personality and how well it gets along with people and other animals when it grows into adulthood. It is very important for puppies to have frequent, positive social experiences during these early months in order to prevent asocial behavior, fear, and biting. Puppies that are inadequately socialized may develop irreversible fears, leading to timidity or aggression. This is not to say that socialization is complete by 4 months of age; only that it should begin before that time. Continued exposure to a variety of people and other animals, as the pet grows and develops, is also an essential part of maintaining good social skills. It is also extremely important that your new puppy be exposed to new environments and stimuli at this time (e.g., sounds, odors, locations, sights, surfaces) to reduce the fear of the unfamiliar that might otherwise develop as the pet grows older.

Puppy socialization – what to do

It is essential that every puppy meets as many new people as possible (including babies, children, adults, and seniors), in a wide variety of situations, but be careful not to overwhelm it. Begin with calm introductions to one or two people at a time. If the pet handles this well, then more people, increased noise, and more activity can be added. It can be beneficial to ask each person who meets the puppy to give it a small piece of kibble or a tiny treat. This will teach the puppy to look forward to meeting people. It will also discourage handshyness, since the puppy will learn to associate new people and an outstretched hand with something positive.

Once the puppy has learned to sit on command, have each new friend ask it to sit before giving the treat. This teaches a proper greeting and will make the puppy less likely to jump up on people. You should make certain that the puppy has the opportunity to meet and receive biscuits from a wide variety of people, especially those who differ from those in the family home. In the case of puppy socialization, variety is definitely the spice of life. The fear that might arise from the way a person looks, acts, sounds, moves, or perhaps even smells might be prevented by exposure during the socialization period. In particular, every effort must be made to see that the young pup has plenty of opportunities to learn about children. They can seem like a completely different species to dogs since they walk, act, and talk much differently than adults. Running, screaming, bicycles, roller blades and skateboards are also some of the varied stimuli that might be more common when children are around. Puppies that grow up without meeting children when they are young may never feel comfortable around them when they become adults. In addition, if you consider that perhaps you might want your pet one day to be a service or visitation dog, the range of possible sights, sounds, smells, actions, and interactions to which your dog might be exposed could also include riding on elevators, the sounds of hospital equipment, wheelchairs or the patient in a nursing home with a cane, walker, oxygen tank, or iv pole. Lack of experience with a variety of people during puppyhood is a common cause of social fear, avoidance, and biting.

Take the pup to visit friends' homes to interact with them and with their pets. The ideal home is one with calm children and calm pets that don't go out to parks or other areas where they might pick up disease organisms and bring them back home, and where the pets have received appropriate immunizations and parasite control. As soon as your veterinarian determines that your puppy is adequately vaccinated, take it on as many walks and outings as possible. Just be careful to avoid areas where stray dogs roam that might carry diseases.

Puppy classes

Attending puppy classes during the primary socialization period (which begins to wane by 12–14 weeks of age) is another excellent way of ensuring multiple contacts with a variety of people and other dogs. This relatively new concept in training involves enrolling puppies early, before they pick up bad habits, and at an age when they learn very quickly. Puppy training and socialization classes are now available in many communities where, with the proper healthcare precautions, puppies can be admitted as early as 8–10 weeks of age. These classes can help puppies get off to a great start with training, and offer an excellent opportunity for important social experiences with other puppies and a wide variety of people. Since there can be some health risks when exposing young puppies to other dogs and new environments, the best age to start your puppy in classes, and the best classes in your area, should be discussed with the family veterinarian. For further guidelines on puppy socialization and puppy classes, visit the American Society of Veterinary Behavior website at avsabonline.org.

Avoid unpleasant experiences

A young puppy's interactions should always be supervised to ensure nothing happens that might make it afraid of people. Go slow with socialization exposure, and if the pet ever seems anxious, take some time out and then re-expose it to people in slightly calmer situations.

In addition, avoid all physical punishment. Harsh scolding or punishing a young pet will damage its bond with you and weaken its trust in people. Techniques such as swatting the pup, shaking it by the scruff, rubbing its face in a mess, and roughly forcing it onto its back should never be used. Pets that are raised using these methods may grow up to fear the human hand, and are more likely to display avoidance or become fear biters. In general, any interactions with people that might make a puppy anxious should be avoided, particularly during the early months of its life.

Socializing takes time and patience, but the benefits are worthwhile, so be sure not to miss the opportunity to guide your pup through this important process. Proper socialization will help ensure that your pet grows up to be social, friendly, and well adjusted.

Best wishes for a long and happy relationship!

Stereotypic and compulsive disorders

1. Compulsive disorders often arise from situations of conflict or anxiety, but can appear spontaneously for no apparent reason. If the source of the stress or conflict can be identified, it should be addressed. Early intervention, before the problem becomes habitual or complications arise, provides the best opportunity for success. While pets likely have a genetic susceptibility to developing compulsive disorders, reducing sources of stress and providing outlets and opportunities to keep the pet stimulated and enriched can help to prevent the development of these problems or reduce their frequency or intensity. However, when the problem begins to affect the pet's normal daily functions or the problem is too frequent or intense, then it has likely become a compulsive disorder, which generally requires a combination of behavioral management and drug therapy.
2. Medical problems may be the cause of the behavior. Therefore, before diagnosing a compulsive disorder, all possible medical problems must be considered. In addition, if the pet begins to lick or chew at itself, regardless of whether the initial problem was behavioral or medical, the pain and infection caused by the licking will first need to be resolved. Unfortunately, since pets cannot let us know how they feel (i.e., itchy, painful, unable to help themselves) your veterinarian will need to determine this by diagnostic tests and possibly by a medication trial.
3. The treatment program should begin by identifying sources of stress and conflict for your pet and resolving them. By looking at when, where, and in what situations the problem was first seen, it might be possible to identify the stressors that caused the problem, so that these might be resolved. However, while this can be an excellent starting point, when the problem has become compulsive, treating the stress and conflict alone is seldom sufficient. For the behavioral workup and to measure progress, it may be helpful to make a video recording of the problem and keep a diary.
4. If you can determine when the problem is likely to arise and in what situations, it might be possible to prevent the problem or preoccupy the pet with another activity that is incompatible with the undesirable behavior. Environmental enrichment when you are not around should include toys, chews, or other activities that can help to keep the pet occupied and distracted.
 - (a) Cats: Give your cat new places to perch, new areas to climb or scratch, or paper bags or boxes to explore. Some cats will show interest in the television or a video. One way to keep a cat's interest is to find toys that simulate prey so that it has opportunities to hunt, chase, bat, or pounce on the toy. Toys that can be batted along the floor, hung from door frames, or are battery-operated will get the cat's interest if they are the right size and texture and are changed intermittently so they remain novel. Another way to maintain interest is to stuff toys with food, treats, or catnip. Some of the new toys now available are designed to be filled with food, treats, or catnip and require manipulation to remove them from the toy. Some cats are attracted to kitty herb gardens.
 - (b) Dogs: A variety of toys have been developed that can be coated, filled, or stuffed with food to attract and occupy the dog for long periods of time. Interest can be maintained in the toy if it takes time to remove all of the food. The time to empty a toy will depend on how motivated the pet is and what has been placed inside (e.g., liver is more interesting than biscuits for many dogs), texture, and novelty (alternate which toys and treats you use each day). In addition, a hungry dog is more likely to try and get the food out, while a sated dog may have no interest, so try placing some of the dog's meal in the toys. Freezing the toy after stuffing with moist food or treats can increase the duration of time spent chewing. Dogs that enjoy investigating and exploring may be better distracted by games where they have to search to find new toys and treats. Videos designed for dogs to view may be of interest to some dogs.
5. When you are home and available, social enrichment should be offered where the pet gets quality time with you (and vice versa), consistent and regular training to be able to communicate better what you want your pet to learn, as well as exercise and play that meet the needs of your family and your pet. Walks, swimming, jogging, and playing with toys, as well as training, should be the minimum; however, more rigorous games and structured activities such as agility, flyball, retrieving, or herding trials might better meet the needs of some dogs and breeds. For cats, toys for chasing that simulate prey generally work best. Social play with other pets and people can also be encouraged (e.g., dog parks) unless these situations make the pet uncomfortable (see Boxes 4.6 and 4.7).
6. Provide a predictable environment and routine. It is neither appropriate nor necessary to keep the pet engaged in activities at all times. By providing some regularity and predictability to the daily routine and by providing enrichment at the times when the pet most needs it (especially when it might begin to engage in the compulsive behavior), the pet should be able to settle into a bedding location at various times of the day where it feels comfortable and can relax (safe haven). A favored blanket or stuffed toys, television or white noise, a piece of your clothing, pheromones, or even aromatherapy might help the pet to feel more comfortable and secure. Of course, there is a great deal of variation between individual pets based on their behavioral genetics and anxiety level, but

pets can be calmer and more in control if they have a predictable routine and predictable environment where they have choices to engage in acceptable activities and are prevented from engaging in unacceptable behaviors. Any environmental change should be made slowly since some pets are particularly sensitive to novelty and change. Therefore, using similar bedding or litterbox, both familiar toys and new toys that interest and occupy the pet, confining to familiar areas, limiting access to new environments unless you are available to help ease the transition might be considered.

7. Provide predictable consequences and communication. Predictability in rewards (this refers to anything the pet wants) means that the pet learns what behaviors get rewards, which can only be achieved if you are consistent in each response (e.g., we will go out the door only if you sit first, you will get affection only if you sit calmly or lie down at my feet, you will be greeted only if you are quiet and sitting, we will continue to walk forward only if you keep the leash slack, you will get this chew toy only when you lie on the mat). Of course once the behavior is learned it needs to be placed on cue/command so that you can begin to communicate verbally what is desirable and the pet has learned the meaning from previous training and reinforcement. During training, you should also specifically focus on rewarding those behaviors that are desirable alternatives to the compulsive disorder such as go to your mat, down and stay, sit and watch, and come. Any training devices or techniques such as the head halter, body harness, clicker training, or Manners Minder that might be used to aid in the control and treatment of the compulsive disorder should be incorporated. For some pets, training devices can help you obtain and reward desired outcomes more quickly.
8. Your response to the pet's behavior is important as some responses can actually aggravate the problem.
 - (a) Positive punishment (application of a stimulus that decreases behavior) should, for the most part, be avoided in pets but particularly those with fear, anxiety, or compulsive disorders. Even if the punishment is consistent and timed properly to suppress the undesirable behavior, it can increase the pet's fear, anxiety, and conflict and may possibly damage the bond between you and your pet. In addition, punishment does not address how the pet should behave in the situation. Punishment can be avoided, for the most part, by supervision, confinement, or pet-proofing to prevent undesirable behaviors.
 - (b) Any attention, whether affection, treats, or toys to try and calm the pet, or even mild attempts at punishment, can inadvertently reinforce the behavior. While it is best to reward desirable behavior and ignore undesirable behavior, if you are unable to prevent the initiation of the stereotypy or compulsive behavior, the focus should be on interrupting the behavior as it first begins and teaching an alternative acceptable behavior (see Response substitution, below).
9. Response substitution and counterconditioning: Ideally the behavior program should reduce or eliminate the expression of further stereotypic or compulsive behaviors. However this may not always be the case. Counterconditioning can be used to change a pet's emotional response to a stimulus. For example, if visitors coming to the home or pets or people on the other side of a fence cause frustration and conflict, a favored reward can be paired with each exposure to make the association with the stimulus positive. However, the most practical way to modify the behavior is to teach the pet an alternative response by interrupting the behavior as it begins and engaging the pet in an alternative behavior which can be reinforced. Reward-trained verbal cues (e.g., come, lie down, go to your mat) and clicker training can be excellent ways to reward desirable behaviors immediately. Pets that cannot be effectively interrupted with verbal cues can be supervised with a leash attached either to a head halter (dogs) or body harness (dogs and cats) to prompt the pet gently to engage in an alternate behavior. Be certain to reward the pet immediately but only after the undesirable behavior has ceased and a desirable behavior is displayed.
10. Other options for interruption might be considered, such as a shake can, ultrasonic device, or remote spray collar, but only if they can be used to stop the undesirable behavior successfully without causing further fear, anxiety, or conflict. Similarly, prevention may be a useful or necessary adjunct to the program to try and break the cycle when the pet cannot be supervised. Sedation or devices that can physically stop the expression of the stereotypic behaviors (such as crates to prevent access to problem areas, tie-downs to prevent repetitive behaviors, Elizabethan collars and bandaging (perhaps with a bitter-tasting coating) for self-trauma, or muzzles for licking, sucking, and pica, may be considered. The pet should be monitored to ensure none of these techniques actually cause aggravation of frustration.
11. Behavioral drugs that help return the serotonin system to a more normal state of function, such as fluoxetine or clomipramine, can also be effective. However, additional drugs that further modify neurotransmitters, anxiolytic drugs, seizure medications, and medications that treat neuropathic pain could also be needed.

Guide to crate/confinement training

Guide to crate/confinement training

Confinement training is intended to provide a comfortable and safe area or “den” for the dog, while restricting access to areas where it might house-soil, do harm to itself, or cause damage. Crate training should be considered akin to placing a young child in a playpen or crib for playtime or sleeping. Other alternatives for confinement include housing the dog in a pen, run, or dog-proofed room, where it might have more freedom to stretch out, chew, or play with its toys. If you don’t provide a safe confinement area at times that you cannot supervise, your dog may engage in stealing, chewing, or ingesting household possessions, eliminate in undesirable locations, and get into potentially dangerous situations.

The location and methods should be designed to keep the experience positive. For example, the dog should be encouraged to sleep, nap, or play with its chew toys in its confinement area. On the other hand, if the dog is confined at a time when it is in need of play, attention, or elimination, then escape attempts and anxiety are to be expected. If a dog’s attempts at escape are successful, then future, more ambitious attempts to escape are likely to occur; therefore always use a secure, inescapable form of confinement.

Benefits of a crate/confinement-trained dog

1. Security – a specific area that serves as a den or resting area for the dog
2. Safety for the pet
3. Prevents damage (chewing, investigation, elimination) to the house
4. Aids in the training of proper chewing and elimination by preventing failure and encouraging success
5. Traveling: accustoms the dog to confinement for traveling and kenneling
6. Improved bond: fewer problems, less discipline for the pet and less frustration/anxiety for owner

Crate training

1. A metal, collapsible crate with a tray floor or a plastic traveling crate works well, provided it is large enough for the dog to stand and turn around. Some dogs adapt quicker to a small room, run, or doggy playpen.
2. Because dogs are social animals, an ideal location for the crate is a room that the family frequents such as a kitchen, den, or bedroom, rather than an isolated laundry or furnace room. If you have observed your dog choosing a particular corner or room to take a nap, or you wish your dog to sleep in a particular location at night, then this might be the best location for the crate.
3. For the crate to remain a positive retreat, it should *never* be used for punishment. If social isolation (time out) is used, consider placing the dog in a laundry room or bathroom until it is calm.
4. A radio or television may help to calm the dog and may help to mask environmental noises that can trigger barking. A pheromone (Adaptil) spray in the crate or a diffuser in the room may help to calm the puppy.

Puppy crate training

1. Introduce the puppy to the crate as early as possible. Place a variety of treats, toys, or food in the crate so that the puppy is motivated to enter voluntarily. Training to respond to a cue (e.g., “Go to your kennel”) can also be useful.
2. The first confinement session should be after a period of play, exercise, and elimination (i.e., when it is time for the puppy to rest). Place the puppy in its crate with a toy and a treat and close the door. If you remain nearby and the puppy is tired it might soon settle and nap. Alternatively, if the puppy lies down to take a nap, move the puppy to the crate for the duration of the nap.
3. Leave the room but remain close enough to hear the puppy. Some degree of distress vocalization may be expected the first few times the puppy is separated from its family members. Always reward the pet when it is calm with quiet praise. Try not to let it out when it cries or whines. Release the puppy when the crying stops, when it awakes from its nap, or if it is time for you to wake the puppy for feeding, play, or elimination (e.g., prior to your departure).
4. If crying does not subside on its own, a mild interruption may be useful. Any interruption that causes fear or anxiety must be avoided since it is not psychologically healthy for the pet and could aggravate the vocalization or cause elimination in the crate. During the interruption, you should remain out of sight, so that the puppy does not learn to associate the interruption with your presence. A sharp noise, such as that provided by a shake can containing a few coins, can be used to interrupt barking. Then, after 5 seconds of quiet behavior, reward the puppy for being quiet by softly praising.

5. Repeat the cage and release procedure a few more times during the day, including each naptime and each time your puppy is given a toy or chew with which to play. Always give the puppy exercise and a chance to eliminate before securing it in the crate.
6. Prior to bedtime, the puppy should be exercised, given a final chance to eliminate for the night, and secured in its crate. Do not go to the pup if it cries but ensure that the puppy is not hurt or overly distressed. If the puppy cries in the middle of the night, it should not be ignored if it is indicating that it needs to toilet. Release the puppy when it is quiet and time to get up. Puppies under 4 months of age may not be able to keep their crate clean for the entire night, so it may be necessary to get up during the night initially as well as provide an early-morning walk for the first few weeks. Sometimes the best way to reduce distress vocalization is to locate the crate in the bedroom.
7. Never leave the puppy in its crate for longer than it can control itself or it may be forced to eliminate in the crate. If the pup must be left for longer periods, a larger confinement area with paper for elimination, a puppy litterbox, or access to an elimination area outdoors through a dog door will be necessary.
8. Until a puppy has been housetrained (no accidents for at least 4–6 consecutive weeks) and no longer destroys household objects in your absence, it should not be allowed out of its confinement area except under supervision. During supervision, desirable behaviors should be rewarded and undesirable behaviors prevented or redirected.

The adult dog

1. The two most important principles for effective crate training include locating the crate (or confinement area) in a location where the dog feels comfortable about sleeping or napping and gradually introducing the dog to confinement in a positive manner.
2. Set up the crate in the dog's feeding area or sleeping area with the door open for a few days. Place the dog's food, treats, and toys in the crate so that it enters the crate on its own.
3. Once the dog is regularly entering the crate voluntarily, begin closing the door for very short periods of time and follow the same principles as puppy training above.
4. At this point, the dog could be left in its crate during bedtime or during short departures.
5. Some dogs may adapt quicker to crate training by having the dog sleep in the crate at night.
6. If you are leaving your pet in a crate be certain to determine how often it needs to eliminate and how long it can be confined without social contact or exercise. While some dogs may manage for a full work day, it is likely in most dogs' best interest to arrange for a midday dog walker if you are going to be gone for more than 4–6 hours.

Crate-training problems

If your dog is particularly anxious or eliminates in its crate, then it may be an indication that some part of the crate-training technique needs to be revisited.

1. It may be possible that the dog is being left in its crate longer than it can control elimination. Confine the dog for a shorter time and be certain that it has eliminated prior to confinement.
2. If the crate is overly large some dogs may sleep in one end and eliminate in the other. Consider a smaller crate or a divider.
3. If your dog is anxious or attempts to escape when left in its crate, then it may not have been accustomed to its crate in a gradual and positive enough manner. Review the steps above so that the crate is in a comfortable bedding location, that each introduction is positive, and that the crate is not used for punishment.
4. If the dog has previously escaped from its crate, this may encourage further escape attempts. Change to a more secure confinement area or ensure that the crate is inescapable. It may then be necessary to supervise the dog in its crate for a period of time to help reduce anxiety and deter further escape attempts.
5. Some dogs are particularly resistant to crating. These dogs may adapt better to other types of confinement such as a pen, dog run, small room, or barricaded area (e.g., using a child gate).
6. Rule out separation anxiety as a cause of crate anxiety.

Destructive chewing and digging

Choose the right toys

1. Select toys that are appealing but safe. Find textures and scents that are attractive to your dog and maintain interest. Play toys should be big enough that they cannot be swallowed. If the toy may be damaged by chewing make certain it is not harmful or toxic if swallowed; otherwise closely supervise its use. Raw-hide pieces should be large enough for the puppy to gnaw; rolled or flat sheets may be preferable to sticks or pieces with knots that might cause problems if swallowed.
2. Choose toys that maintain the dog's interest as long as possible such as those that can be coated, stuffed, or filled with food to maintain interest. Toys can last considerably longer if the chews are attached to the toy or can be stuffed tightly inside. Dental treats and dental foods are healthy for the teeth and may prolong chewing.
3. Change toys, rotate through them, or fill with treats or food to maintain interest.
4. Choose toys that are not similar to your possessions (e.g., old shoes, towels, or clothes).
5. Use praise and affection, or occasionally toss a small treat to the puppy for chewing on its toys.
6. Many toys are designed to be coated, stuffed, or filled with food treats to be self-rewarding when chewed. Freezing the toys with food stuffed inside may extend the duration of chewing and play. Toys such as Buster Cube, Tricky Treat, Crazy Ball, Twist'n Treat or Kibble nibble are designed to be filled with food or treats and manipulated to deliver the contents slowly and encourage the pet to work for its food.

Encourage exploratory play

Food can be hidden throughout the environment to encourage exploratory behavior.

Provide a regular regime of social play

1. Engaging in regular activities with your dog provides social, physical, and mental enrichment as well as structure and routine. Social activities might include walking or jogging, retrieving games such as Frisbee, or playing ball, swimming, or more intense activities such as flyball, herding trials, or agility to meet the needs of high-energy individuals and working breeds. Obedience training provides quality time with the family, while teaching new tasks.
2. Tug games can be an energetic form of social interaction and oral stimulation. Toys should be durable and designed for games of tug, and should not include your possessions. Train your dog to release the toy using treats or another toy as rewards during play. Be sure the pet shows no toy aggression before beginning tug games. If the dog will not give up the toy and becomes possessive or aggressive, cease tug games and seek guidance from a qualified behaviorist if possessive behavior continues.
3. Dogs with good social skills with other dogs can benefit from play sessions in your yard or at the park.

Preventing and deterring undesirable chewing

1. Even if your dog has sufficient exercise, play, and chew toys, it may still explore, steal, or chew household possessions. Be sure to supervise and prevent it from getting to objects or locations where damage might arise (e.g., barricades, crate training, dog-proofing).
2. Potential targets of chewing might be made less appealing by spraying with aversive-tasting substances or using avoidance devices such as motion-activated alarms or spray devices.
3. If you catch your dog in the act of chewing on something inappropriate, immediately interrupt the behavior with a sharp noise or a pull on a leash. Then, direct the dog's focus to proper chew toys and reward with praise or a treat. However, even if you catch and interrupt your pet when chewing inappropriate items, it may only learn to avoid chewing these items in your presence.
4. Never punish after the act, never use physical punishment, and never use any correction that causes the pet to be anxious or avoid you.

Chewing and anxiety

1. Chewing and destructiveness may also arise in response to anxiety and should not be considered as an attempt to "get even with you." Anxiety could be due to distress about being separated from the family (separation anxiety), noise or storm phobias, and high arousal or anxiety when people or other animals come on to the property. Treatment to reduce underlying anxiety generally requires a consultation with a qualified behaviorist to determine the cause of the problem and develop an appropriate treatment program.

Digging

1. First determine why the dog is digging to develop an appropriate treatment program.
2. Dogs that dig as a form of play or exploration should be provided with greater enrichment and structure in the form of scheduled social play, exercise, and training, by providing toys for chewing and play, or by leaving the dog with a social partner when leaving the pet outdoors (see Chewing, above).
3. If the dog is digging to escape, the fencing will need to be made more secure and avoidance units that activate a spray collar may be added. However, if the pet has previously escaped and the reason for escape attempts is not addressed, the dog may try even harder. Consider blocking sights or sounds, providing a dog house for increased security, and using reward training techniques to reduce fear and anxiety of noises, people or pets on the other side of the fence.
4. For pets digging holes to capture prey or dig a nest and cool off, consider confining the pet to a run or pen with shade and fresh water and provide a digging pit with sand or soil in a portion of the area. Burying toys or food in the digging pit can help encourage digging.
5. Regardless of the cause, digging can be prevented or interrupted by supervising outdoors. Commands such as "come" or "leave it" or keeping a long leash attached should be effective; however, the pet is likely to return to digging when you are not watching.
6. Avoidance training may be effective if the pet can be deterred while the owners are out of sight (e.g., remote spray collar, turning on the sprinkler) or with booby traps (motion-activated spray, alarm, or sprinkler) or deterrents placed in the area (e.g., rocks, gravel, or water in the hole, chicken wire, or fencing over the hole). However, some pets will just change to a new location.
7. Digging can be prevented when the owner cannot supervise by confining the dog to a secure run with gravel, patio stones, or a paved surface. Give feeding and chew toys in the area to provide enrichment opportunities.

Teaching a dog to fetch and drop objects on command

“Fetch” and “Drop it” are excellent commands to teach a young dog. Fetch is a great game that most dogs love. It is mentally stimulating, wonderful for wearing the pet out, an acceptable type of play for children and dogs, and can provide a means for social interaction between visitors and shy dogs. Teaching the pet to drop things on command reinforces the idea that the owner has control over the dog, and comes in handy when the pet has something in its mouth that it shouldn’t.

Teaching fetch

Pick a time when the pet is in an energetic mood and there are few distractions. Toss an interesting toy a short distance. As the pet picks it up and turns to look at you, lower your body, take several quick steps in the opposite direction, wave your hand and wiggle your fingers in an animated way, and say “Fetch” in a very upbeat tone. This should catch the attention of the pet and prompt it to come toward you. Continue to repeat “Fetch” as the pet approaches.

If the pet runs the other way with the toy, lies down and chews it, or does not come all the way up to you, simply walk away and end the play session. You must avoid chasing after the pet, walking toward it to take the toy, or attempting to coax the pet to return.

Drop it – first step

The first step involves luring the pet to drop the toy and teaching a cue word. As the pet approaches with the toy, place a piece of food between your forefinger and thumb. When the pet reaches you, move your hand and the food toward the pet’s mouth with a bit of a flourish. Hold the food in front of the mouth without saying anything. When the pet opens its mouth to take the food, the toy will fall out. As this is happening, say the cue words, “Drop it,” and pick up the toy with the other hand as you allow the pet to take the food.

Repeat until you notice that the pet is starting to drop the toy as your hand just begins the downward movement toward it.

Use a small piece of food that is more interesting than the toy, but not so interesting that the pet will forget the toy and only focus on the food. Each time the pet takes the food from your hand, say “Good dog.” If the pet is not interested in food, you can use a second toy in place of food to lure it to drop the fetched toy.

Drop it – second step

The next step is to turn the cue words into a command. Instead of putting the food in front of the pet’s mouth and waiting until it opens to say “Drop it,” say “Drop it” as you begin to swing your hand down toward the pet. Pick up the toy, give the food, and say “Good dog.” Repeat this at least 12 times before advancing to the next step.

Drop it – third step

The last step involves gradually phasing out the food. Hold your hand like you have food in it, swing it down toward the pet, and say “Drop it.” When the pet drops it, say “Good dog” and give it loads of praise. As you continue to practice, alternate between a food reward and praise, but vary the ratio of praise rewards to food rewards so the pet doesn’t know exactly which reward it will get each time it drops the toy. As the training progresses, you should be using more praise and less food. When combining the drop and fetch exercises, your dog may also learn that by dropping the toy, it gets the opportunity to chase and fetch it again. End the session on a positive note with your dog dropping the toy and getting a final reward.

Give it

If you prefer to have a “Give” command, you would proceed exactly as with “Drop it,” but in each case you would place your second hand under or on the toy and reward the dog when the toy is released into your hand.

Having problems?

If the dog will not drop the toy, you can first increase the value of the lure while using a toy to fetch that is of less interest to the dog.

Another method for teaching drop is to watch the puppy closely without interacting any further until it eventually drops the toy or object it is carrying. As soon as the toy is dropped, say “Drop it” and call the pet over for a high-level reward. The use of clicker training can be particularly effective to mark and capture the “drop” behavior. After a few sessions try and anticipate when the pet is about to drop the toy, say “Drop” just in advance and reward immediately with “Good drop” or a click and food reward.

Drop it – other items

Once the pet learns the “Drop it” command during play, the command can be used whenever it has anything in its mouth. The transition from dropping toys during fetch to dropping more desirable items, like raw hide or food wrappers, should be made very gradually. Rank the pet’s toys from the least desirable to most desirable.

When you notice that the pet has the least desirable toy in its mouth, ask it to drop it using a command and hand signal. Praise it or give a small food reward, then ask it to sit and return the toy to the pet. When you find that it drops that toy readily, move to the next toy in the rank, and so forth. Be sure always to use an upbeat tone of voice and make the training fun. Practice is very important. The pet needs to drop something on command at least several times each day if you expect to be able to get to the point where it will drop special items like food wrappers and dead birds on command.

Behavior modification for dogs with fear and phobias toward noises and locations

There are many different stimuli that can frighten your dog. This handout is designed to develop a program for improving or resolving fear of inanimate stimuli such as places, noises, or objects. When the fear is severe, it may be too intense for your dog's well-being and impractical for you to improve without combining a drug or natural supplement with the behavior program. Once a pet becomes fearful of something, that fear can be generalized so that it occurs in response to a variety of other noises, locations, or unusual situations. In addition, each exposure to the fear-eliciting stimulus with a negative outcome further increases the fear. Therefore avoidance is essential until improvement can be made.

Treatment of fear

In simple terms, the pet must be exposed to the fear-evoking stimulus at a great enough distance or reduced volume that it is not fearful. If the association with the stimulus can be turned into one that is positive, the pet may develop a positive attitude to the stimulus.

Desensitization is used in combination with counterconditioning to change a pet's attitude or "feeling" about the stimulus from one that is negative to one that is positive. Desensitization involves controlled exposure to situations or stimuli that are weaker or milder than will cause fear. Counterconditioning is then used to change the dog's response to the stimulus by associating a favored reward with each exposure to the stimulus. The dog is then gradually introduced to similar but progressively more intense stimuli paired together with the presentation of the favored reward. If an inappropriate response (fear, escape attempts, aggression) is exhibited then an attempt should be made to distract and calm the dog, or remove the dog to a distance or location where it can be successfully calmed.

Response substitution involves training the dog to behave in a calm and relaxed manner (sit, settle, go to a mat, walk on loose leash) and then engaging it in a behavior that is incompatible with the fear response for rewards when exposed to the fearful stimulus. Response substitution is likely to be effective if the dog is consistently responsive to the training and the exposure to the fear is at a low enough level that the dog can be successfully cued to respond to the command. A head halter and leash can be used to ensure success and high-valued rewards (clicker training may be helpful) used to mark and reinforce an acceptable relaxed response.

Any exposure to the fear-eliciting stimulus before you are able to calm your dog will worsen the fear and anxiety. Be certain stimuli are well controlled, and mild enough so that your pet is less likely to be reactive. Do not plan any exposures unless you are confident you can achieve a positive endpoint. Since a dog's response is also influenced by your emotional state and the behavior of the people or other animals to whom your dog is being exposed, any threats, agitated behavior, or punishment will further aggravate the problem.

Steps for treating a pet that is fearful of inanimate objects and sounds

1. Know the signs of fear: Identify all stimuli and situations that cause the pet to be fearful. Remember that multiple stimuli may add to the fearful response so that each stimulus should be identified separately. For example, a pet that is fearful of a vacuum cleaner might be afraid of the sound, sight, or motion of the vacuum cleaner. Pets fearful of thunder may also react to the rain, lightning, darkness, barometric pressure or electric charges.
2. Prevent your dog from experiencing the stimuli except during counterconditioning. This may be difficult for certain phobias such as thunderstorms so that medication and products might be needed to help calm your pet or reduce exposure to the stimuli. Confinement to an area where sounds or sight of the stimuli can be avoided, using music or white noise to reduce external sounds, calming caps or goggles that reduce visual stimuli, ear bands or muffs that reduce audible stimuli or calming shirts or wraps, might aid in reducing the level to one that is tolerable for the dog.
3. Train the dog to relax or settle on command, in the absence of any fear-evoking stimuli (see [Box 7.2](#), client handout #23, for training dogs to settle, and client handout #13 on structured interactive training, C.14, available online). Begin in an environment where the dog is calm, focused, and has minimal distractions. Gradually proceed to progressively more distracting locations and situations. The initial conditioning should be done by family members with whom the pet is calmest, most controlled, and responsive. For some dogs, using a head halter improves the speed and safety of training. Implementing a program of predictable interactions where all affection and social rewards are only given for calm and focused behaviors helps to reduce anxiety both by giving the pet control over its rewards and by ensuring that only calm behaviors get rewarded. Practice the training in a variety of environments using treats or toys as rewards. Consider clicker training to be able to immediately reward and gradually shape more relaxed responses when at a distance from your pet.

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4. For storm and firework phobias, it can be particularly useful to train the pet to settle or go to a location where it feels comfortable and secure, and where the auditory and visual stimuli can be minimized, such as a crate with a blanket or cardboard appliance box as cover. In addition, positive cues can be implemented that further calm and distract the dog. This can be accomplished by pairing a CD, video, white noise, or even a towel or blanket that has the owner's scent with each positive settle training session. Encourage the dog to enter voluntarily by placing its favored chews and food-filled toys in the area.
 5. Each stimulus that leads to fear must be identified and placed along a gradient from mildest to strongest. It will be necessary to reproduce the stimuli so that they can be muted or minimized and presented in a controlled manner. An audio recording or video might be a good starting point for conditioning to the sound of the stimulus. If a pet is afraid of the sound, sight, and movement of the vacuum cleaner, then these may all need to be controlled and introduced separately.
 6. Determine the pet's favored rewards and save these for retraining and counterconditioning. For some pets, food is the strongest reward while others may be more responsive to a favored play toy. The reward should be presented each time the pet settles in response to the stimulus. Always train with a quiet, relaxed, upbeat tone of voice.
 7. If the pet responds fearfully as you proceed slowly through more intense stimuli, stop the exposure, wait till the pet is fully calm and reward. the stimulus can be reintroduced at a slightly lower level, and desensitization and counterconditioning can resume.
 8. Once each stimulus has been presented along a gradient of increasingly stronger stimuli and the pet acts calmly and takes rewards in the presence of each stimulus, the separate elements can then be combined and gradually introduced as a group (e.g., vacuum turned on and moving).

Considerations

If the stimulus evokes a strong anxiety response at the beginning of the training session, then the stimulus is not sufficiently muted. It may be necessary to redesign the stimulus gradient so that a slower, more cautious approach can be taken. A leash and head halter might also be used to improve success. Clicker training might also be implemented to help precisely time rewards.

Behavior modification for dogs that are afraid of people or pets

There are many different stimuli that can frighten your dog or lead to an aggressive response. Although fear can lead to avoidance and escape attempts, the dog that is defensive or aggressive when it is frightened can pose a serious danger. This handout is designed to help improve or resolve fear of people and other animals. Fear can be generalized to all people or all animals of a certain type (e.g., children, strange dogs) but can also be quite specific so that fear may only be exhibited with specific people (e.g., delivery men with beards, small white dogs).

Treatment of fear

The plan involves repeatedly exposing the pet in a controlled manner to the type of person or animal that causes fear, and pairing that exposure with something the pet really likes. In time, the pet should actually look forward to and enjoy being with the person, although there may be some limits on how much you can expect your dog to tolerate. For example, not all dogs will be comfortable with physical contact (petting by people) or playing with other animals.

Desensitization is used in combination with counterconditioning to change the pet's attitude or "feeling" about people or animals from one that is negative to one that is positive. Desensitization involves controlled exposure to situations or stimuli that are weaker or milder than will cause fear. This can be done by beginning the sessions with the stimulus (person, other animal) sitting or staying far enough away so that the pet is not anxious.

Counterconditioning is then used to change the dog's response to the stimulus by associating the dog's favored rewards (food, toys, play) with the stimulus. The dog is then gradually introduced to similar but progressively more intense stimuli paired together with the presentation of a favored reward. If an inappropriate response (fear, aggression, attempts at retreat) is exhibited, then the dog should be moved slightly farther away so it can calm, take the reward, and end the session with a positive outcome.

Response substitution is used to train the dog to display a new acceptable response (e.g., sit or lie down calmly) each time it is exposed to the stimulus. Again, rather than attempting to overcome an intense response, the training should be set up to expose the dog to stimuli at a low enough intensity that fear is not evoked. Before training with fearful stimuli, begin a program of structured interactions where every time your dog seeks attention, you only give the attention for behaviors you want your dog to learn. Be consistent and predictable and your dog will quickly learn. For example, asking your dog to sit, lie down, or go to its bed (or waiting until it does one of these behaviors) before giving attention will teach your dog that these are the behaviors that get rewards. This is a win-win situation. Not only do you train the behaviors you want, but you give the dog control over its rewards, since it now can learn what behaviors are rewarded. Rule structure reduces a dog's anxiety and teaches desirable behaviors. Also use food, play, and treats in the same way to train the same behaviors in other situations. Once your dog is responsive to these commands when there is no fearful event, then training to overcome its fears can begin. A head halter and leash can be used to ensure success and high-value rewards used to mark and reinforce an acceptable relaxed response. You may also consider clicker training.

You will heighten the pet's fear or anxiety if you respond with a raised voice, agitation, or punishment. How the stimulus reacts also affects your dog's response; therefore, ensure exposures begin with stimuli that are well controlled, mild, and non-threatening. Avoid all further fear-evoking stimuli until you are ready for successful exposure. The goal is to reward only desirable responses. Therefore, it is critical that rewards are not given until your dog is calm, settled, and displaying the behavior you want it to learn.

Steps for treating a pet that is afraid of animate stimuli (people, other animals)

1. Know the signs of fear; identify all stimuli and situations that cause fear (e.g., children playing, tall men).
2. Prevent your dog from experiencing the stimuli except during conditioning sessions.
3. If there is aggression associated with the fear, then your dog should be trained to wear a head halter or basket muzzle so that safety during exposure exercises can be ensured.
4. Train the dog to relax on cue in the absence of any fear-evoking stimuli. Work on the cues you plan to use when you begin exposure. Outdoors, you might focus on walking with a short amount of slack leash ("heel"), sit and focus and turn and walk in the other direction ("walk away"). Indoors, "sit" and "focus," "down" and "settle" or crate and mat exercises might be most useful. A head halter can be used to ensure success.
5. Once the dog will reliably focus, settle, and accept rewards in a variety of environments, then training can progress to include exposure to controlled levels of the stimulus.

6. Set the pet up to succeed. A familiar dog or person can be used as the initial training stimulus to ensure that your dog will relax and take rewards as soon as it sees the stimulus (e.g., dogs on the street, visitors at the door).
7. For both counterconditioning and response substitution, the dog's favored rewards should be used. Save the rewards of highest value for training sessions and exposure to the stimuli.
8. You will need to develop a gradient for introduction to the fear-evoking stimulus so that initial exposures are mild. Setting up sessions with good stimulus control can be difficult and take some forethought but is essential for successful counterconditioning and response substitution.
- (a) First, list all stimuli that might incite fear or anxiety. Stimuli may be sights, sounds, smell, or touch. There may be multiple stimuli that need to be improved. For example, a dog that is fearful of children on bicycles may need to be desensitized to bicycles, children, and bicycle motion separately.
 - (b) Once each stimulus is identified, a means of controlling the stimuli along a gradient of increasingly greater intensity must be developed. A gradient can be designed using distance from the stimulus (far to near), similarity (e.g., beginning with least similar to what causes fear and moving to more similar), activity level (low to high), noise level, location (from calmest to most problematic), and familiarity (train to family members before strangers). If the dog is calmer or more responsive to a trainer or particular family member, that person should work with the dog first.
 - (c) Advance along the gradients very slowly. If you proceed through a step too quickly and the pet responds fearfully, relax, and allow the pet to settle. By using a leash and head halter, it is often possible to calm the dog with a gentle pull to get eye contact and release when calm. Otherwise move back to a distance where the pet calms. Once the fear response has ceased, give the valued reward. At first the animal or person should avoid eye contact and walk back and forth at a distance that does not cause fear.
 - (d) The favored reward is paired with success and calmness at each new step. Ideally give the reward as soon as the dog looks at the target (LAT). If the dog shows no aggression and looks away, or looks at you, removing the dog can also serve as a valuable reward (in addition to the food reward). Always end each session on a positive note.

Example

A dog might be most fearful of young boys at a distance of 15 meters (50 feet) or less while playing in front of the house. Four gradients could be used: distance, appearance, location, and actions. For distance, exposures would start at 20 meters (65 feet) (i.e., beyond that which would evoke the fear response) and move progressively forward a few meters at each session as long as the dog takes the rewards and shows no fear. The appearance gradient might start with exposure to adults or teenagers before younger boys. The activity gradient might begin with two people standing quietly and progress gradually to more intense play, and a location gradient might begin with off-property training such as boys playing at a distance in a park. If the fear was toward boys on bicycles or roller blades, then desensitization and counterconditioning with the bicycle or roller blades would also be necessary. One method might be to use a family member for training the dog to make positive association with bike riding, before counterconditioning to children standing with the bike and then riding the bike.

Fear/anxiety toward other animals

The approach is similar to that outlined above.

For aggression toward other animals, stimuli that might cause anxiety are visual: physical characteristics (e.g., species, breed, color, size, age), postures, facial expressions and actions, odors, and sounds (e.g., growl). As the other animal begins to interact with your dog, tactile cues may also be a factor to consider, so progress slowly with each new stimulus. Always know and accept your dog's limits.

Be confident, calm, and make sure your dog is responsive to commands and motivated for the rewards to ensure successful outcomes. A leash and head halter will provide more control if safety is an issue.

Desensitization and counterconditioning for cats that are afraid of people or other cats

The plan involves repeatedly exposing the pet in a controlled manner to the type of person or animal that causes fear, with the exposure minimized so that the cat will take a favored reward each time it sees the stimulus until a positive association is made.

Desensitization is used in combination with counterconditioning to change the pet's attitude or "feeling" about the stimulus from one that is negative to one that is positive. Desensitization involves exposure to people, animals, or situations that might cause fear but at levels that are minimal enough that your cat will adapt. Counterconditioning is used to change the cat's response to the person or animal by associating the cat's favored rewards with each exposure. The cat is then gradually introduced to gradually more intense stimuli (e.g., closer) paired each time with the presentation of the favored reward.

Response substitution is where the cat is trained to display an acceptable behavior (toy chase, come, fetch) for favored rewards each time it is exposed to the stimulus. This training can only be used if the cat can be successfully reward-trained to respond eagerly to one or more commands. As with counterconditioning, the training should begin with a stimulus of low enough intensity to ensure the cat responds to the command and reward.

Favored rewards (treats, play) must be saved for reward training and exposure training so that the pet can make the positive association between the stimulus and the reward. Avoid all fear-evoking situations until you are ready for exposure training as each fearful event may increase the cat's fear. If you become agitated, raise your voice, or punish the pet, you will only serve to heighten your cat's fear or anxiety.

Finally, be certain to train only with calm, controlled stimuli. The goal is to make each association with the stimulus positive and nonfearful. If you begin to expose your cat and it becomes fearful, remove the cat from the situation and begin subsequent training at a less threatening level.

Fear of people and pets – desensitization and counterconditioning – common first steps

1. Begin with safe and effective control of both your cat as well as the stimulus that causes fear. Initially the cat and the stimulus (other cat, people) can be separated by confinement behind a common solid door (until the cat adapts to the odor and sounds of the stimulus) or across a glass or screen door, which would allow for safe visual exposure. A positive association can be achieved (countercondition) by giving the pet favored rewards with each exposure.
2. The next step is gradually to increase the intensity of exposure while ensuring the cat continues to take rewards. If barriers have been used, the goal is gradually to get the cat into the same room with the stimulus (person, pet) at sufficient distance that the cat will take the food or treat.
3. If the cat exhibits fear at any step in the desensitization program, go back to the step that was successful and repeat until the pet will readily take rewards before progressing again. Always end on a positive note. It is critical that the owner and the stimulus at all times remain calm and show no fear and that the owner uses no punishment as these will increase fear and anxiety.

Fear of people and other animals

1. Identify the fear-eliciting triggers. For some cats, fear may be generalized so that all strangers or other animals cause fear. Other cats may be afraid of specific people or pets. Until prepared to move forward with conditioning exercises, avoid all fear-evoking stimuli.
2. Setting up safe exposure: because a fearful cat can quickly become aggressive, precautions must be taken before beginning treatment. Some method of safe exposure will need to be devised. Initial exposure to stimuli should be sufficiently mild and gradual that no fear is exhibited. A good starting point is to have the cat adapt to the sounds and smell of a visitor by giving the cat rewards while housed in an adjacent room. Videos or audio tapes might be useful for introducing the sound of a stimulus at low intensity. If the cat becomes anxious and cannot be called away with a command and reward, a large blanket or towel can be wrapped around the cat to move it into another room until it calms.
3. Each stimulus will need to be presented along a gradient beginning with exposures to the stimulus that do not cause fear, and moving slowly to higher intensities with each positive outcome. To develop a gradient you will need to determine how to control the stimuli that cause fear (situations, people, places, or animals) so that they can be gradually intensified for counterconditioning. If the cat is fearful of a particular person or type of person (e.g., child), the training can begin with milder stimuli, such as a calm adult or teen. The stimulus intensity is then gradually increased. The person may move slightly closer during training sessions, but should not move closer until the cat takes the reward and is calm. Next, the goal will be for the person to give or offer the reward to the cat, or to throw it near the cat so that it approaches to take the reward. Each step should end on a positive note, with the cat receiving a reward before proceeding to the next level. Withhold rewards except when the stimulus is present.

4. Control can be provided with a leash and harness, keeping the cat in a crate or carrier, or by closing doors to block escape (provided the cat does not become aggressive or more fearful). The cat should be positively conditioned to accept any new control device prior to exposure.
5. Food or treats that have the highest appeal should be identified and saved exclusively for desensitization, counterconditioning, and reward training. Favored toys, catnip, and even short periods of affection may also be effective for counterconditioning if these are important to the cat and reserved for the exposure sessions.
6. Training the cat to respond to verbal cues such as "sit," "come," or "go to a place" before every reward is given may provide a useful, predictable pattern of interaction. Cats may also be taught tricks.
7. If the cat is too reactive or anxious to learn new behaviors then medication or pheromones may reduce anxiety and promote positive learning.

Treatment – fear of other cats: desensitization and counterconditioning

1. Introduction of a new cat into the household or reintroducing a cat in the home to one that it fears must be done slowly and cautiously so that each association has a positive outcome.
2. Once the cats have been adapted to each other across a common doorway, there must be a safe means of control so that the cats can be put in a common area. It may be helpful initially to place a towel with the cat's scent in the other cat's confinement area for a week before beginning visual exposure. Another approach is to allow one cat out into the common area while the other remains housed in its own room and to alternate for a few days so that they are each familiar with the common area. Also add as much space for perching, climbing, and hiding as is practical, and maintain separate litter stations to reduce conflict. It may also be helpful to offer a collar-activated cat door so that each cat can learn to go back into its own room without the other cat following.
3. When placing the cats together maintain sufficient distance that they show no fear and will take treats, catnip, or play toys when together. A body harness on one or both cats or crates for one or both cats may be useful when first introducing them to a common area together.
4. At this point, if both cats have been in crates, the more fearful cat may be allowed out, and the food, treats, toys, or catnip should be given progressively closer to the other cat's crate. When both cats can be placed out of the crates in the same room together while eating at a sufficient distance to avoid fear, a leash and harness on one or both cats may be necessary for safe control. If one or both cats do not eat, move the food bowls farther apart. If things go well, the dishes can be moved slightly closer together during subsequent conditioning sessions.
5. Progress slowly! Allowing either cat to become fearful or aggressive sets the program back. The cats must remain separated except during counterconditioning sessions.
6. When the cats appear ready for some freedom to roam the home, it might help to place a bell on the assertive cat to help the family supervise and so the other cat knows when it is near.
7. Drugs and pheromones (e.g., Feliway) may be useful during a behavior modification program to reduce apprehension and allow the cat to learn pleasant associations.

Counterconditioning to approaches at the food bowl

The purpose of this exercise is to help your dog feel comfortable when you approach the food bowl. Make sure you only progress when your dog is relaxed. If your dog is tense, back up in your training.

Put your dog's food bowl down with the normal amount of kibble.

Stand at a distance from the bowl at which your dog doesn't react. Make sure that you have treats which are better than what is in your dog's bowl.

Say your dog's name and then toss a treat into the bowl or next to it. Watch your dog's body language. If it is tense at all, walk away. When you practice again the next day, stand farther from the bowl.

Continue as above until your dog sees you approach and sits or comes toward you in a friendly way. When it does this, provide a reward and walk away.

When your dog can perform the behavior above consistently, take one step forward and start over. Continue over many sessions to close the distance.

Handling and feeding exercises for puppies

Handling and feeding exercises for puppies

The first goal (level 1) of handling exercises is to teach the puppy to tolerate and enjoy handling by family members and friends. The second goal (level 2) is to teach the pet to tolerate more intensive, firm, or unfamiliar forms of handling that might be necessary for restraint, grooming (including nail trimming, ear cleaning, and combing), teeth brushing, veterinary care, or that might arise in greeting or play with new people or children. If the puppy can be trained to associate these forms of handling with treats and play, it may not become problematic when the puppy experiences them later. The goal is to “proof” the puppy as much as possible to prevent it from getting upset if it is handled roughly or caught by surprise.

Similarly, feeding exercises are intended to help the pet accept and enjoy approach and handling during feeding.

Precautions

1. Avoid any type of handling during these exercises that causes the pet to become agitated or anxious.
2. If you observe threats or aggression during any of these exercises, seek guidance from your veterinarian, a veterinary behaviorist, qualified applied animal behaviorist, or a trainer before proceeding.
3. Reaching for the puppy should always be positive. Hand contact must always be considered a friendly (nonaversive) gesture. Never hit the pup or roughly grab its muzzle or neck.

Handling exercises

A. Level 1: teaching tolerance

The goal of handling exercises is to accustom the puppy to accept and enjoy handling by friends and family members.

1. Begin by only working with the puppy when it is calm.
2. Gently inspect its ears, mouth, paws, belly, and haircoat.
3. Initially interact for only 1 second and end with praise or food (before the pup’s dinner time is a good time to do this).
4. Anticipate the puppy’s mood and reaction and always stop before the puppy starts to object.
5. Repeat the exercises frequently, gradually lengthening each interaction time.
6. Always praise the puppy when it relaxes while being handled.
7. Progress slowly enough to avoid eliciting resistance, aggression, or anxious behaviors. Don’t ever force the puppy to endure handling, especially if it seems uncomfortable or stressed.

B. Level 2: helping puppies to tolerate more intensive handling

1. Act calm and cheerful; offer food or a toy.
2. Speak quietly, and then gently touch, pet, stroke, or massage various areas of the body and around the collar while giving the pet food or a toy as well as quiet praise.
3. Gradually increase the intensity of touching, pushing, patting, and grasping different areas of the body (e.g., face, feet, muzzle, ears) as the puppy gets more used to it. Never cause pain or discomfort to the puppy!
4. Always praise the puppy and intermittently give favored treats whenever it allows handling.
5. Start with short sessions, anticipate the puppy’s attention span, and stop before the puppy gets tired of the exercise.
6. Consider your dog and lifestyle and adapt and progress with your handling exercises (gentle, positive, reward association) to what the puppy might one day be expected to encounter (e.g., brushing the teeth, lifting and carrying, bathing, grooming, cleaning ears, wiping feet, nail trimming).

Feeding exercises

Food bowl handling is intended to teach the puppy to feel comfortable and even learn to enjoy the presence of people while it is eating or near its food bowl.

A. Stay with the puppy after you put down the food bowl. Give quiet praise while it is eating.

B. Food bowl handling (teach that the hand is coming to give, not to take away).

1. Quietly walk by the puppy while it is eating and drop a piece of canned food, meat, or cheese-flavored treat into the food bowl. When your puppy is happy with you doing this, then ask visitors to do the same.
2. Occasionally reach down toward the bowl and put a food treat in it.
3. Place the bowl in your lap or on the floor in front of you. Feed the puppy from the bowl. Handle the food, gently pet the puppy. Act cheerful, but talk quietly.
4. Take the bowl away. Put a highly desirable food treat in the bowl, and then immediately give it back.
5. Gently touch and handle the puppy while putting a food treat in the bowl.

Caution: These exercises are *only* for young, friendly puppies; if your pet is older, exceptionally shy, fearful, or aggressive do not do these, but contact your veterinarian or a behaviorist for help.

Teaching structured interaction training (SIT) for all interactions

Purpose of these exercises

- Gain more control of the pet by consistently rewarding what is desirable
 - Reduce uncertainty and anxiety by being structured, predictable, and consistent so that your pet learns what behaviors get rewards
 - Train behaviors that are calm and relaxed which might then be extended to other situations where problems might arise
1. Teach the dog to sit on cue. Practice until it is sitting nine out of 10 times when asked.
 2. Ask your pet to sit before you give it anything it wants or needs (e.g., petting, play, feeding, going outside, getting on the furniture).
 3. Each time your dog approaches you and requests attention in an impolite way, such as pushing on your hand, pushing a toy at you, or leaning on you, ignore it for 5 seconds or more, then ask it to sit and reward it. Continue this until it automatically sits for attention. Then go to the next step.
 4. When your pet approaches you for attention or a reward, do not acknowledge it until it sits. This can be difficult but you must wait your dog out. If your dog sits, reward it. If any behaviors are exhibited except sit, simply ignore or walk away.
 5. You will have another chance soon because your dog is very likely to seek you out shortly. If it offers a sit when you ignore it, praise it, reward it, or lavish it with attention. Your dog is getting it! Within a couple of days your dog should sit for all attention.
 6. Very gradually request longer sits and more relaxed postures. If your dog chooses to lie down for attention, this is also acceptable.
 7. Continue to reward your dog only if it sits or lies down calmly for attention throughout your dog's life.
 8. Maintain structure and predictability in all your interactions:
 - (a) Anytime you have something that your pet finds rewarding, ensure that your pet learns what response is expected before the reward is given.
 - (b) Practice sit before you attach the pet's leash, before going out the door for a walk, and before crossing the street. You might even consider a sit-stay before your pet is allowed to follow you up or down the steps.
 - (c) During walks, do not allow your dog to walk ahead unless it maintains a small amount of slack on the leash. Have your dog stop or sit if it pulls ahead and only proceed if the leash remains slack.
 - (d) Before giving your dog its food, a feeding toy, or a chew toy, have it sit calmly or consider having it lie on a bed or mat next to its feeding area before giving the reward.

Puppy housetraining guide

Choose the desired location and teach the puppy where to go

1. Ensure that the outdoor location is practical and easy to access.
2. Go out with your puppy every time and immediately praise and give intermittent food rewards for elimination in the desired area.
3. During initial training, take the puppy out to eliminate each hour during the daytime when home to supervise. If it does not eliminate within 5 minutes, return indoors, supervise closely for 15–30 minutes and try again.
4. Take the pet out when it is most likely to need to eliminate:
 - Following play, exercise, naps, and being released from confinement.
 - After eating and drinking. Supervise closely after feeding and take the puppy out to eliminate within 15–30 minutes.
 - Prior to confinement or bedtime.
5. Consider teaching your puppy to “go” on command by saying a command word, such as “hurry up,” in a positive tone as it squats to eliminate.

Maintain a consistent schedule

1. Offer food two to three times each day at the same time to help establish an elimination routine.
2. Only leave the food down for 20 minutes or until your puppy walks away. Be sure to discuss with your veterinarian how to assess your puppy’s body condition score so that food quantity can be adjusted according to your pet’s needs.
3. Consider taking up the water bowl 1–2 hours prior to bedtime.

Prevent mistakes

1. Until the puppy has completed 4 consecutive weeks without soiling in the home, it should be within eyesight of a family member or confined to a safe puppy-proofed area.
2. Use a crate, pen, or room for confinement whenever it cannot be directly supervised. The confinement area is intended to serve as a safe, comfortable bed, playpen, or den for the puppy. The puppy should not be confined until after it has eliminated and had sufficient exercise and social interaction (i.e., when it is due for a sleep, nap, or rest) and should not be confined for any longer than it can control elimination, unless paper, potty pad, or litterbox-training techniques are being used.
3. Most puppies can control elimination through the night by 3–4 months of age. Owners must be aware of their puppy’s limits. During the daytime, puppies up to 4 months usually have a few hours of control, while puppies 5 months and over may be able to last longer.
4. If the puppy eliminates in its cage, it may have been left there longer than it can be confined or the crate may be large enough that it sleeps in one end and has room to eliminate in the other; in this case a divider might be used temporarily. Also, if the puppy is anxious about being confined or left alone, it is unlikely to keep the crate clean.
5. Leave a leash attached during supervision to interrupt any attempts to eliminate indoors, and direct the puppy outdoors. By observing the puppy closely for pre-elimination signs, the puppy can be trained to eliminate outdoors without the need for punishment and may soon learn to signal when it has to eliminate.

Handling mistakes

1. Punishment should not be used. The goal is to interrupt your puppy if it is caught in the act of eliminating indoors, and direct it to the appropriate location so that it can be rewarded when it eliminates there.
2. If you catch your puppy in the act of eliminating indoors, call the puppy to come and if it does not immediately cease say “no,” clap your hands, or pull on the leash to interrupt the behavior. Then take the pet outside and immediately reward upon completion.
3. If urine or stool is found on the floor after the puppy has eliminated, do not consider any form of correction since the puppy will not associate the correction with the elimination. You can prevent soiling in the home by closing doors or moving furniture to prevent access to the location, booby trapping the location with a repellent or motion detector, constant supervision of your puppy, and by consistently rewarding elimination outdoors.

Odor elimination

Clean up any odors from indoor elimination. Be certain to use enough product to get to the source of the odor. Use one of the products that have been specifically designed to eliminate pet urine odors (chemical modification, enzymes, bacterial odor removal).

Paper or potty pad training

1. While it is best to avoid indoor training techniques if the goal is to teach the pet to eliminate outdoors, this approach is sometimes necessary for apartment dwellers or when it is not practical to take the puppy outside frequently enough. For paper or potty training, the puppy can be confined to a room or pen with paper covering the floor opposite to its bedding, water bowl, and toys when it cannot be supervised.
2. Paper training can be combined with outdoor training so that the puppy learns that there are two appropriate places to eliminate. The puppy can be placed in its crate (which can be placed inside the pen) for short-term confinement and placed in the full pen or room with paper for longer departures.
3. Another option is to train the pup to eliminate indoors using a litterbox. Use the same techniques as for outdoor housetraining except that, instead of taking the puppy outdoors, it should be taken by leash to its litterbox and reinforced with praise and treats for litter use. If the litter is not used within 5 minutes, supervise the dog closely with a leash and take it back to the litter every 15 minutes until it is used.

Allowing time outdoors (in environments where appropriate)

Another option for some households is to allow the dog to spend time outdoors in a pen or run where it can eliminate. When indoors, close supervision is still required to prevent indoor elimination. Accompanying the dog outdoors and reinforcing outdoor elimination should also be incorporated into the training regimen.

Litter-training kittens

In order to prevent litterbox problems in adult cats, it is extremely important to get your kitten off to a good start. Fortunately, most kittens are attracted to an area where they can scratch, dig, and perhaps bury their urine and stool, so that dirt, clay, or any other “litter” that allows for digging will usually be effective. However, if there are other surfaces that are attractive to your kitten such as plants with soil, you will need to prevent access to these areas. Most kittens can easily be housetrained if offered a suitable litter, in a quiet location with easy access. The box *should* be scooped and refilled each day or any time you see it has been used, and it should be changed at least once a week. Whenever you see your kitten using the box, be sure to provide rewards. To ensure that there are enough clean litterboxes available at any one time and to reduce the possibility of conflicts at the litterbox, provide at least one box per cat.

Begin by closely watching the kitten at all times or confine your cat to the room where the litter is located when you cannot supervise. Be sure the room has everything the kitten needs to keep it happy: places to climb, perch, rest, and scratch, and some food, water, and play toys. If you are supervising and your kitten begins purposely sniffing around, it may need to eliminate. Say “litter time,” gently pick it up, carry it to the litterbox, and place it inside. Praise any sniffing or scratching and give praise, a small treat, or a play toy for eliminating. Do this for at least the first 2 weeks and a regular pattern of using the box is likely to be established. You may also find that in time the command “litter time” might get it to go to the box to eliminate to get the reward, without the need to move the kitten physically.

Litter (substrate)

1. Choose an appropriate litter material. Studies suggest that more cats prefer clumping litter. It's also easier to keep clean, although it may lead to tracking of material outside the box. Other commercial litter materials may prove equally or more appealing. Kittens that eat litter should not be given clumping litter.
2. If the litter you have chosen is not being used by your kitten, try other types. Some kittens may prefer a different texture. Traditional clay litter, recycled newspaper litter, plastic litter pellets (pearls), wheat litter, cedar shavings, or even a little potting soil or sand added to the litter may be more appealing.
3. If your kitten won't use the litterbox, try to determine if there is anything about the litter that it doesn't like. For example, you may find that the scent, texture, a litter liner, litter additive, or insufficient cleaning is leading to avoidance.

Litterbox

1. Choose an appropriate litterbox. The box should be big enough that an adult cat can move about and scratch. Many litterboxes are too small for a cat to enter comfortably, squat, and dig. Some kittens even prefer self-cleaning litters while others are frightened by these products.
2. If the litterbox is not being used regularly, try other types. Some kittens prefer the privacy of a hooded box. A larger box may be more appealing, such as a sweater storage box or even a small child's swimming pool if you have multiple cats. Some kittens may prefer a deeper box with more litter while others may prefer lower sides so that they can be more easily accessed. Some kittens may prefer a ledge on which to perch surrounding the litterbox.
3. If your pet won't use the litterbox, try to determine if there is anything about it that is deterring your kitten. For example, you may find that a hood, sides that are too high, a litterbox that is too small, or a motorized self-cleaning litterbox may lead to avoidance.

Location

1. The box should be located in a quiet area that is easily accessible to the pet, especially when it wakes from a nap, or after eating or playing.
2. If the box is not being used by your kitten, consider sites that are easier to access including the ones that the kitten prefers to use. If you use the room for other functions (e.g., bathroom), it may be inaccessible to the kitten when it needs to be used.
3. If the litterbox is in an area that might be unpleasant or anxiety-evoking for your kitten (e.g., a dark basement, or next to a furnace, air vent, washing machine, or toilet) it may be necessary to relocate it.
4. Some kittens will avoid the area if they are chased, cornered, or bothered by another cat or dog in the area. If this is the case, then additional locations or more privacy may be needed (e.g., a cat door to the area).

Spraying

Some cats, especially males that reach puberty and have not been neutered and female cats in estrus (heat), may begin to mark their territory by backing up and spraying a stream of urine on vertical (upright) objects and surfaces. Neutering will stop the spraying behavior in most cats. If neutering is not successful you will need to seek advice to determine why your cat is continuing to spray. Treatment may involve finding and resolving the source of territorial stimulation, addressing anxiety or conflict in the home, reducing urine odor, or using a pheromone (Feliway) or medication.

What to do if your kitten does not use the litterbox

1. Determine whether your kitten is soiling with urine, stools, or both and identify the surfaces and locations that are soiled. Discuss the problem with your veterinarian since medical causes must first be considered.
2. Next, determine where and when the kitten is eliminating to try to determine why it might be avoiding its litter and what the kitten might prefer about the area where it soils. It might then be possible to move the litter or change the litter or box to suit the kitten best.
3. Remove the odor thoroughly from flooring and carpets with an enzymatic/bacterial cleaner.
4. Change the function of the area by placing food bowls, toys, or a scratching post in the area.
5. Consider blocking access to any area where the kitten is soiling or make the area unpleasant with a motion-activated alarm or spray or with an uncomfortable surface such as double-sided tape or a sheet of vinyl carpet runner with the nubs pointing up.
6. If there is more than one cat, provide more litterboxes and at least two litter stations.

Infants, children, and cats

How the cat responds to a new baby or child will depend upon previous experiences as well as the cat's genetic temperament. The most sensitive time for cats to begin learning positive social experiences is in the first 2 months of life, although ongoing positive exposures through to adolescence also play an important role. Some cats will adapt quickly to children and new babies by either ignoring them or eventually seeking them out for investigation or social contact (e.g., bunting or cheek rubbing), while others may immediately be inquisitive, playful, and affectionate. While investigation, seeking affection, and social contact may be desirable, these behaviors must be well supervised since they can still lead to injury to the child, or inappropriate responses from the child to the pet. Fortunately most fearful cats will avoid as long as they are not restrained and have sufficient opportunity to retreat to an area in which they feel safe and comfortable. However, cats that respond with aggression can be particularly dangerous.

There are three basic considerations for helping cats to adapt to new babies or children. The first is to adapt the cat's schedule, permitted behaviors, family interactions, and environment slowly so that it is prepared for the arrival. The second is for the family to supervise all interactions with the cat and the baby to ensure safety, and so that positive interactions can be rewarded. The third is to help the child adapt to the needs and tolerance of the cat so as to prevent the development of behavior problems.

Advanced preparation of the home

Many cats can become stressed and anxious when there are changes to their daily routine, social interactions, or environment. The cat's response may be a change in behavior or attitude with respect to humans or other cats (increased fear and avoidance, irritability, or aggression), urine or stool marking in the home, or displacement behaviors such as overgrooming and hair loss. There may also be an impact on the cat's physical health, such as a change in appetite (decreased or increased), activity level (increase or decrease), sleep-wake cycles, or even medical conditions with a stress-induced component (e.g., feline interstitial cystitis, a stress-related inflammatory disease of the bladder). The family should consider how the daily schedule, social interactions, and household will need to be changed when the new baby arrives and slowly begin to adapt the cat in advance of the new arrival. Whenever possible change should be made slowly and should be associated with positive events and interactions such as food, treats, affection, and play. For example, if the cat initiates play by chasing and play-attacking moving objects, the family should initiate and provide play sessions and play toys to meet the cat's needs. If there are rooms, counters, and areas of the house that will be out of bounds for the cat when the child arrives, then the family should begin in advance to keep the cat out of these areas, and teach the cat where it is allowed to sleep, play, and explore. It may also be advisable to set up any new furniture in advance of the baby's arrival, as some cats can be particularly sensitive or reactive to new structures and odors.

Some cats are anxious when they hear strange sounds. For these cats, a recording can be obtained of baby noises (e.g., cooing, crying, screaming). The recording should be played at a level that is low enough to cause no anxiety while tasty food treats, play, or catnip toys are offered. The volume should be gradually increased over several weeks until the cat seems comfortable with these noises at full volume. To prepare the pet for the new smells that will arrive with the baby, a towel or blanket with the baby's scent can be brought home from the hospital. The cat should then be taught to associate the object with favored rewards. On occasion, some cats may become anxious or overly investigative when a family member carries, changes, or nurses the new baby. Testing the cat by carrying around and fussing with a doll (especially one that actually moves and makes crying sounds) can be useful. A positive association should be made with this doll using favored play toys, treats, or food rewards before the baby arrives. If there is concern that additional safe control will be required to supervise and introduce the cat and baby, then training the cat to wear a body harness or giving it a separate room in which it can be housed comfortably can be extremely useful. In addition, using favored toys or treats, the cat can be trained to respond to a few positive commands (e.g., come, let's play, to your room), which could then aid the owners in engaging the cat in desirable behaviors at times when problems might arise. Some cats adapt better to change if a Feliway diffuser is placed in the environment.

When the baby arrives

The simplest rule to help with the arrival of the baby is for all interactions with the cat and the baby to be supervised and kept positive, while monitoring for potential problem behaviors (fearful or overly aggressive, affectionate, or playful). Any major problems should be addressed with the aid of a qualified behavior consultant. At all other times, such as when the baby is sleeping or playing in its playpen, access should be prevented. Even an affectionate cat could choose to lie down next to the young baby, and this might be particularly dangerous for babies that cannot yet raise their heads or turn over. When the cat and child are together, all appropriate interactions should be reinforced. It can be particularly helpful to identify all things positive to the cat (food, affection, play, catnip, treats) and provide them when the baby and cat are together, while reducing their availability when the baby is not around. If the cat reacts fearfully or unpredictably or there is a potential danger or risk to the new child, then access must be prevented and a body harness might be used to ensure future safe introductions. If there are any changes in the cat's general demeanor, health, activity level, feeding, drinking, and elimination, these are signs that should be immediately reported to the family veterinarian. Occasionally, Feliway or anxiolytic drugs combined with the behavioral program can help the cat to adapt.

As children grow up

As the child grows and becomes more mobile and interactive, the relationship between the cat and child may change. Fear and anxiety, as well as exuberant playful behavior, could become problematic. As always, supervision to assess the cat's response to the child and the child's interactions with the cat is the best way to ensure that desirable responses are rewarded and any undesirable responses are identified and the cat or child calmly removed from the situation. If problems do arise, preventing similar types of future interactions may be the safest plan, but a program of careful and entirely positive reintroduction might effectively improve the relationship.

As the baby continues to grow and mature, the cat will be exposed to a variety of new stimuli from the baby crawling to toddling to walking, and even trying to approach, grab, chase or take things away from the cat. Even if the cat has adapted nicely to a particular stage in the child's life, the family must always be prepared for a change in the relationship between the child and pet. Interactions between cats and young children should always be supervised. The spontaneous active behavior of children might be frightening for the cat or elicit unacceptable play behavior.

An important thing to remember is that children are great imitators. Family members must be good role models; they should not do anything to the pet that they do not want the child to do. This includes hugging, physical punishment, teasing, and rough play. Children don't know how to interact with animals, so they must be taught how to approach, handle, and play with the pet. While some cats will tolerate physical contact, the child will be safer if taught to avoid making contact around the eyes, ears, and head, and to stroke the cat along its side. Hugging, getting face to face, and lifting are not well tolerated by some cats and are best avoided. On the other hand, be aware of what your cat likes and dislikes. If it enjoys being lightly scratched between its ears or stroked over the shoulders, these types of interactions might be a place for the child to start. However, if the cat might bite when petted, or when certain parts of the body are touched, these types of interactions must be avoided and the practicality and safety of keeping this type of cat in a home with children must be evaluated and considered.

Children must also learn rules about other pets. The most important rule is that the child must *never* touch another family's pet or give it food unless an adult gives permission. Cats running loose should never be approached. All family members must also follow these rules as a model for the child's behavior. Children must be taught to recognize and avoid potentially dangerous behaviors. The family should review aggressive postures (growling, hissing, hair standing on end) and fearful behaviors (trembling, crouching, ears back, tail tucked, attempts to escape) so that the child learns to avoid these animals.

Other resources include a DVD that teaches children to be safe with cats, *Dogs, Cats and Kids: Learning to be Safe with Animals* (dogscatskids.com), and the website www.growingupwithpets.com.

Infants, children, and dogs

Preparing puppies for children

Preparation for a good relationship between the pet and children begins when the dog is a puppy. To accomplish this, there should be frequent opportunities for the young pup to meet children during its early months of life. In fact, up to 3 months of age, puppies are most social, and the experiences they have and the people they meet at this age can make a lifelong impression. However, ongoing positive exposures through to adulthood are also necessary to maintain healthy social relationships. Of course, genetics also plays a role in how a dog interacts with people and other animals.

Puppies should be introduced to children when they are calm and treats should be used to facilitate introductions. Puppy classes that encourage family attendance can be a way to meet children in a controlled environment. Early positive interactions help prevent the development of fear, avoidance behavior, and aggression toward children when the pet is older. Another concept the young pup needs to learn is that being touched by people can be a pleasant experience. However, the reality is that most pets will have some limits on when, how frequently, with whom, and the quality and type of contact that they will tolerate or enjoy.

All family members should make a point of gently and positively handling the puppy in all the ways that a child might touch it. Making positive associations (e.g., with treats or during play) while touching the tail, ears, and body, and grasping the collar as well as teeth brushing, grooming, and claw (nail) trimming should help the dog adapt to contact with all parts of the body, which might be similar to what might be encountered with a child. Any type of physical punishment, threats with a hand, or forceful interactions (e.g., pinning, roll over) should be avoided. All pets must learn that the human hand is friendly and not to be feared (i.e., associated with treats, receiving toys, and affection). If the pet associates hand movement with discomfort, it might bite when the child moves a hand toward it.

Some dogs show aggression when approached while they eat. This behavior might be avoided by teaching the young pup that it is good to have company at dinner time. A family member could occasionally sit on the floor with the puppy while it eats. During this time, treats can be intermittently added to the food bowl or offered to the puppy while eating. Combine this with gentle petting while giving the treats. The family can pick up pieces of kibble from the bowl, and hand feed them to the puppy. The bowl can also be periodically removed for few seconds, and a small piece of meat or cheese added and then the bowl placed back on the floor. Family members should occasionally drop a piece of meat or a chunk of canned food into the bowl as they walk by. By doing these exercises, the pup should look forward to having people nearby at meal times and that humans will not steal their food. However, if any of these exercises cause fear or apprehension, the action should cease and the family should seek veterinary guidance. Repeatedly taking the food bowl away while the pet is eating without a positive association (e.g., getting a special treat) will just irritate the pet and should be avoided.

Preparing the adult dog for the new baby

The first thing to consider is the dog's temperament. All types of aggression should be considered potentially dangerous, especially if the dog growls or snaps when touched, disturbed while eating, playing with toys, or resting. If the dog exhibits any type of aggression this should be resolved before the baby arrives. Even if the dog gets along well with children, the child that inadvertently gets too close to a dog that exhibits territorial aggression may be injured. Young children are more likely to be bitten by family pets or familiar dogs than unfamiliar dogs with minimal provocation. Therefore, even if improvement is achieved, the family should be aware of any potential risks and have a practical and realistic understanding of the limits as to when and how the child should interact with the family dog.

As soon as the mother-to-be learns of her pregnancy, some thought should be given to preparing the dog for the inevitable changes. Dogs are likely to become anxious if the routine, environment, or the way the family interacts with the dog is changed or lacks predictability. Therefore gradual adjustments should be made before the baby arrives. Feeding, exercise, and play schedules, as well as sleeping and resting areas and any new routines or rules (e.g., rooms the dog is permitted to enter, furniture on which the dog is allowed to sleep, jumping up during greeting, barking at the window) will need to be put into place ahead of time to fit the family's situation once the baby is home.

If the family is consistent and predictable in their responses, the dog should quickly learn those behaviors that get rewards and those that do not. This is particularly important when giving attention. If the pet gets attention by nudging, head pressing, pawing, or licking, the family must stop rewarding these behaviors as they are not acceptable ways to get attention and could be problematic if the baby or child needs care or attention (e.g., carrying, changing, feeding). By consistently ignoring these behaviors and rewarding a desirable way of getting attention (e.g., a relaxed down) the dog should eventually cease the undesirable and offer the new calm behavior that gets the

attention. The pet may initially be confused and frustrated and may escalate the behavior into more intense attention seeking that might include scratching, jumping up, barking, grabbing, or even biting. If the family even occasionally gives attention for these behaviors, they intermittently reward these more intense behaviors. Therefore, well before the baby arrives, the family should begin a program of structured interactions and predictable consequences (learn to earn), so that the pet learns that calm and settled behaviors are the way to get rewards. This effectively puts the rewards (affection, eating, treats) under the dog's control by consistently and predictably training that only calm responses (sit/watch, down/stay, lying on its mat) will be rewarded. To teach the dog what is desirable, food lures, a head halter (which can be left attached with a leash dragging), and obedience commands can be used (if previously effectively trained), or just waiting and watching until the desired behavior is displayed and then immediately rewarding (clicker training can be particularly effective). If the family is consistent and predictable the pet should soon learn that these calm behaviors are the way to get attention.

Commands (cues) should be given prior to the pet's behavior (sit, focus, down and settle, or go to a mat or crate) and rewards timed to follow immediately the behavior that is being trained. Giving rewards inconsistently will delay training and add to the dog's confusion and anxiety about how to get what it wants, and may ultimately reward undesirable behaviors. Other behaviors that are permitted now, but won't be permitted when the baby is at home, must also be addressed (e.g., jumping up, barking at windows, lying on furniture, climbing into the lap) by training and rewarding desirable alternatives (e.g., sit for all greetings, rest on your mat).

The dog might also be prepared for the homecoming by exposing it to the noises and smells of the new baby. If the dog gets upset when it hears strange sounds, a recording of baby noises (e.g., cooing, crying, screaming) can be used in a desensitization and counterconditioning program. The recording should first be played at sufficiently low volume that the dog shows no anxiety, while jovially requesting obedience commands for tasty food treats or some play time. Very gradually, the volume can be increased as the weeks go by until the pet seems comfortable with the noises at high volumes. A towel or blanket with the baby's scent can be taken home from the hospital to prepare the pet for the new smells that will arrive with the baby. The object should be presented while the dog is relaxed and taking treats or playing with a favored toy. Some dogs will be anxious when the parent is carrying or nursing the new baby. Testing the dog by carrying around and fussing with a doll (especially one that actually moves and makes crying sounds) can be useful. If there is any anxiety, a positive association should be made with this doll by giving the dog favored food rewards, affection, or a favored play toy whenever the doll is present.

When the baby comes home

If the dog has not seen the mother for a day or two, there will probably be a great deal of excited greeting behavior when she arrives with the baby. Therefore, if someone else carries the baby into the home, the mother can greet the dog without worrying that it might accidentally scratch the baby. It is important to set the dog up to succeed by anticipating problems and taking steps to prevent them. By taking this approach, scolding, punishment, and anxious feelings associated with the presence of the baby can be prevented.

The family should wait until the excitement has died down and the pet is calm before introducing the dog to the baby. That may be later in the same day or a few days afterward. The dog should be brought to meet when calm and under good control. Careful judgment must be exercised in deciding when to allow the dog close enough to sniff. If there is a chance the dog might jump, use a leash. If more control is needed, a head halter and leash can be utilized. If there is *any* chance that the dog might bite, consider using a lightweight basket muzzle (or avoid the situation entirely). If it can be predicted that a head halter or muzzle is likely to be utilized, it would be best for the family to accustom the dog to wearing these before the arrival of the baby. The family should *never* (no matter how sweet, trustworthy, or friendly the pet appears) allow an unsupervised dog around the baby.

It is especially important to be vigilant when the baby is crying, kicking, or waving its arms. This could cause a curious dog to jump up and injure the infant. During these times, it is wise to train a desirable response, such as a "Down-stay" away from the baby and give favored rewards, or have the dog go to its room, mat, or yard with a special chew toy. The family should immediately seek additional guidance from a qualified behaviorist if there are any suspicions that the pet is exhibiting predatory signs (stalking, strong focus, unusual interest) around the baby.

Whenever the dog is in the room with the baby, the family should remain positive with one family member focused on taking the dog across the room and rewarding acceptable behaviors (e.g., calm, responding to commands, orienting to the baby in a calm manner) with treats, food, play, or affection. With success, the exercises should gradually be moved closer to the baby. The idea is to promote relaxed behaviors and to make the dog look forward to the baby's presence by giving favored rewards each time the dog sees or hears the baby. This association can be

made more dramatic by reducing the amount of attention or treats the dog gets when the baby is not around. In this way, the dog learns that the presence of the baby is associated with positive events, and the absence of the baby is not. The biggest mistake families make when they try to shape the dog's behavior is to concentrate on telling the dog what is wrong, instead of rewarding what is right.

As children grow up

As the baby continues to grow and mature, the dog will be exposed to a variety of new stimuli from crawling to toddling to walking, and even trying to approach or take things away from the dog. Even if the dog has adapted nicely to a particular stage in the child's life, the family must always be prepared for a change in the relationship between the child and pet. Interactions between dogs and young children should always be supervised. The spontaneous, active behavior of children is exciting for most dogs, and might elicit rough play, chase, or anxiety. Encouraging the child to give tasty food rewards to the pet for responding to "Sit" commands is a simple way to teach the pup to keep its paws on the ground and expect good things whenever it is around children.

An important thing to remember is that children are great imitators. Family members must not do anything to the pet that they do not want the child to do. This includes hugging, physical punishment, teasing, and rough play. Children don't know how to interact with animals, so they must be taught how to approach, handle, and play with the pet. For example, fetch is a great game for the child and dog to share. While some dogs will tolerate physical contact, the child will be safer if taught to avoid making contact around the eyes, ears, and head, and to pat the dog along its side. Hugging, getting face to face, and lifting are not well tolerated by some dogs and are best avoided. In fact, young children are more likely to be bitten on the face or head; boys in the age range of 5–9 are at highest risk, and most dog bites in young children are by the family dog, in contexts of resource guarding, or benign interactions such as hugging or petting. The dog should be physically confined away from the child (e.g., dog in crate or secure room, child in playpen, crib, or own room) so that an adult can supervise each approach and ensure that the dog is comfortable with the interaction. Be particularly careful about security and safety (and seek a behaviorist's guidance) if the dog ever growls, threatens, or shows active avoidance when it is sleeping, resting, or handled. Never punish or force affection on a dog that resists. This could lead to increased aggression or could suppress the growling behavior so that the pet no longer warns, but may still bite, when it wants to be left alone.

Children should have some degree of positive control over the pet and this can begin at a relatively early age. Once the child is talking, a family member can hold the child in the lap and teach the pet to sit when the child gives a command and drops a treat on the floor as a reward. This can be done by coaching the child to say the command word at the same time as the adult. Gradually, the adult can phase out the command and the child can give the command alone. This can also be done with other commands. When the child is old enough, it can be taught the same rule structure as the adults so that the dog consistently learns to lie down or sit calmly before giving it things that it wants (toys, treats, play). Nonaggressive pets can be taught to look forward to having the child present while they eat if an adult carries the child and has it toss small pieces of food in or near the bowl.

Children must also learn rules about other pets. The most important rule is that the child must *never* touch another family's pet or give it food unless an adult gives permission. Dogs on a leash, by food, by toys, sleeping, tied down, or running loose should never be approached. All family members must also follow these rules as a model for the child's behavior. Children must be taught to recognize and avoid potentially dangerous behaviors. The family should review aggressive postures (growling, loud barking, hair standing on end) and fearful behaviors (trembling, crouching, ears back, tail tucked) so that the child learns to avoid these animals. If the child is approached by a dog that is acting aggressively, the child should stand very still like a tree, say nothing, hold the arms against the body, and avoid eye contact. If the child is on the ground or knocked down, he or she should curl into a tight ball, cover the ears with his or her fists, and remain still and quiet until the animal moves far away. Some excellent references are available, such as dogscatskids.com, bluedog.com, doggonessafe.com, bowwowow.com, and growingupwithpets.com.

Socialization tips for kitten owners

Even though cats have been domesticated for thousands of years, each new kitten that comes into our world must learn about humans. Socialization is the process during which kittens develop positive relationships with other living beings. The most sensitive period for successful socialization is during the first 3 months of life, especially from 3 to 9 weeks of age. The experiences the pet has during this time will have a major influence on its developing personality and how well it gets along with people and other animals when it grows into adulthood. It is very important for kittens to have frequent, positive social experiences during these early months in order to prevent asocial behavior, fear, and biting. Kittens that are inadequately socialized may develop irreversible fears, leading to timidity or aggression. This is not to say that socialization is complete by 3 months of age; only that it should begin before that time. Continued exposure to a variety of people and other animals, as the pet grows and develops, is an essential part of maintaining good social skills. It is also extremely important that the kitten be exposed to new environments and stimuli at this time (e.g., sounds, odors, locations, sights, and textures) to reduce fear of the unfamiliar that might otherwise develop as the pet grows and ages.

Kitten socialization

It is essential that every kitten meets as many different types people as possible in a wide variety of situations, but be careful not to overwhelm it. Begin with calm introductions to one or two people at a time. If the pet handles this well, then add more people, increased noise, and a variety of activities. It can be beneficial to ask each person who meets the kitten to give it a small piece of food or a tiny treat. This will teach the kitten to look forward to meeting people. It will also discourage handshyness, since the kitten will learn to associate new people and an outstretched hand with something positive. Kittens that are wary of taking food or physical contact from strangers may be enticed if the treat is tossed to the kitten or if the visitor is given a play toy to engage the kitten in a game of chase.

In particular, it is essential to ensure that the young kitten has plenty of opportunities to learn about children. They can seem like a completely different species to the young kitten since they walk, act, and talk much differently than adults. Kittens that grow up without meeting children when they are young may never feel comfortable around them when they become adults. Similarly, since different people can act, look, sound, or even smell different, the more variety in the kitten's life, the better. Lack of experience with a variety of people, especially young children, is a common cause of social fear, avoidance, and biting.

You should also take your kitten to visit friends' homes to interact with them and with their pets. The ideal home is one with calm children and calm pets that don't go out to parks or other areas where they might pick up disease organisms and bring them back home, or in which the pets have had relevant vaccinations and appropriate parasite control.

Avoid unpleasant experiences

The young kitten's interactions should always be supervised to ensure nothing happens that might make it afraid of people. Go slow with socialization exposure, and if the pet ever seems anxious, take some time out and then re-expose it to people in slightly calmer situations.

In addition, be careful to avoid physical punishment or any other interactions with people or experiences in new environments that might make the kitten anxious. Harshly scolding or punishing a young pet will damage its bond with you and weaken its trust in people. Techniques such as swatting the kitten, tapping its nose, shaking it by the scruff, or rubbing its face in a mess should never be used. Pets that are raised using these methods may grow up to fear the human hand, and are likely candidates to become fear biters. In general, any interactions with people that might make a kitten anxious should be avoided, particularly during the early months of its life.

Kitten socialization classes

Although kitten socialization classes are not as popular as puppy classes, consider enrolling your kitten in one of these classes if they are available in your area. They are an excellent way to ensure multiple contacts with a variety of people and other cats and to learn more about the care, handling, and training of kittens.

Socializing takes time and patience, but the benefits are well worthwhile, so be sure not to miss the opportunity to guide your kitten through this important process. Proper socialization will help ensure that your pet grows up to be social, friendly, and well adjusted.

Best wishes for a long and happy relationship!

Establishing a relationship and communicating with your pet

Household lessons for puppies

How to establish a healthy relationship with your puppy

Positive and consistent training, both in action and in attitude, are needed so that your puppy knows what is expected of it at any time. If the expectations are unclear for the puppy this may lead to a variety of problems, including unruly behavior, disobedience, and even aggression. Behaviors such as nipping, excessive mouthing, mounting, and jumping up should be discouraged by teaching appropriate or acceptable behaviors. These exercises will help you manage your pet, increase its dependability in responding to cues, provide structure and consistency, and help reduce impulsive behavior.

A. Be fair

1. Be consistent with rewards and interruptions. Set rules that everyone observes. This is the only way that the puppy can learn what is acceptable and what is not acceptable.
2. Don't take good behaviors for granted. Actively look for desirable behaviors and reward them with treats and praise.
3. Be generous with praise!
4. Never hit the puppy or use any type of physical punishment.

B. Make the puppy aware of your importance in its life

1. Walk your dog so your bond is stronger.
2. Provide a consistent schedule of social play and feeding so that life for the puppy is predictable.
3. Ask the puppy to say please by having it sit before all interactions (dinner, treats, toys, being picked up, walks, petting, play). Although sometimes referred to as "nothing in life is free" or "no free lunch," this rule structure is intended to provide clear and consistent communication for your dog so that it learns what behaviors will get rewards and what will not. In other words, if you are predictable and consistent, the pet will quickly learn what is desirable and anxiety and conflict will be reduced.
4. Once the pet learns to stay, ask it to stay for a second or two before following you around the home, in and out of rooms, and in and out of the home.

C. Teach desirable and prevent undesirable behaviors

1. Ignore attention soliciting and provide another outlet for your puppy. Nudging, whining, barking, mouthing, pushing, and leaning for attention should be ignored. Pull your hands in, lean away from the pet, and look away. Get up and walk away if the pet is exceptionally pushy and difficult to ignore. Once the behavior stops for 5–10 seconds, the pet can be given attention for responding to a cue such as sit.
2. Always respond to the puppy when the behavior is desirable (e.g., notifying you it has to go outdoors to eliminate).
3. Teach the puppy how to play appropriately with you.
4. Teach the puppy when it should bark and for how long (e.g., notify that someone is at the door). Then train and reward quiet behavior.

D. Be consistent

1. Train your puppy to respond to cues and do not expect it to be immediately responsive – your puppy is not a robot! If the puppy ignores you, wait a minute and ask again, quietly. If the puppy still does not respond, perhaps the puppy really does not know what is expected. Go back to basic reward training to better train the behaviors. Quiet and calm responses will encourage what is desirable, while angry or frustrated can lead to avoidance or uncertainty (conflict)

Puppy play biting

Why is my puppy nipping and biting family members?

Although often thought to be a teething behavior, nipping, mouthing, and biting in young dogs are generally forms of social play. Teething is more likely to involve gnawing or chewing on household objects. The first thing you must do is to provide a regular daily routine that includes ample opportunity for play. Social play with people could involve controlled chase and retrieve games, as well as long walks or jogging. Many dogs also enjoy engaging in tug games, which may be an excellent outlet for play biting, providing the games are directed toward appropriate play toys and objects (see below) and under human control. However, if the puppy's play becomes too rambunctious or aggressive, these games may not initially be acceptable.

Puppies need to learn to limit the force and strength of their bite so if mouth contact is utilized, the message is communicated with no damage, commonly known as bite inhibition. This is something they start to learn while with their littermates. It is one reason that puppies should not go to new homes until 7–8 weeks of age so that they have had time to practice social skills with other dogs. Often littermates play very rough and may even seem loud and aggressive. Sometimes one puppy bites another one too hard and screams out; this startles the offending puppy and teaches it how hard to bite during play. These lessons are essential for a puppy and people should not intervene in most littermate puppy–puppy interactions. In addition, after puppies have been adopted into the new home, it can be extremely beneficial to have regular interactive social play periods with other dogs or puppies in the home or in the neighborhood. One of the things that puppies need to learn is how much pressure from their jaws causes pain. Without this feedback, a puppy does not learn to inhibit the force of its bite. Because *all* dogs can and will bite at some time, this lesson is vital for human safety.

How can I stop play biting?

Be sure you are providing the puppy with adequate and appropriate play, exploration, attention, and exercise opportunities.

Strategies to stop play biting include:

1. Prevention: adopt a puppy at 7 weeks of age that has had the opportunity to practice normal, social play with littermates and its mother.
2. Set the pup up to succeed: provide a “mouthy” puppy with toys for oral stimulation; soft toys, food toys and tug of war can help satisfy these puppies’ oral and exploratory needs.
3. Be consistent: family members should agree that the puppy is not allowed or encouraged to bite or nibble on a person’s hands, feet, or clothing. What seems cute and innocent in a puppy will not be so at maturity.

How is this lesson taught?

When puppies play with each other, if one puppy bites another too hard, the bitten puppy will yelp, and may stop playing and leave. This sends the message to the puppy that its bites were too hard and if it wishes to continue to play, it needs to be gentle. However, people often do not send this message to their puppy. In the beginning, some owners might allow their puppies to chew and bite on them without reprimands and the puppy assumes that the behavior is acceptable. Children appear to be most vulnerable because their attempts at stopping the biting may not be properly timed or sufficiently abrupt to stop the puppy from biting. In fact a child’s response is often seen by the puppy as an invitation to increase its level of chase and play. Adult supervision or a head halter for training (discussed below) should help to ensure more immediate success.

The message people should send is that mouthing and chewing on hands are painful and lead to immediate cessation of play. All family members must consistently follow the rules for the puppy to understand and learn what is considered desirable behavior and what is not. However, regardless of the technique, you cannot expect the play biting to cease until you first ensure that you are giving regular and sufficient opportunities for play. If your puppy begins to bite or chew and tug on clothing, immediately stopping play (negative punishment) is the preferred response, or walk away if the puppy persists. The message is that all social interactions with you will stop as soon as biting begins. Sometimes a sharp “off” command can be helpful to indicate that social interactions will cease if the biting continues. Playing with the puppy when it is not attention seeking, nipping, or biting is the goal. In fact, all forms of play and attention-soliciting behavior should be ignored, as these might escalate into more intense biting. If all family members are consistent in their responses, the puppy should quickly learn that play biting leads to inattention rather than play. If you teach your puppy to sit or lie quietly before each play session, you should soon have your puppy trained that these behaviors, and not play biting, will be rewarded with a play session.

If ignoring the puppy and walking away do not stop the biting, then you will need to work on training desirable behaviors and discouraging the undesirable behavior. Having a leash attached at all times during interactions and play can be an excellent means of preventing undesirable behavior, as well as prompting and teaching desirable behavior. Another technique is to emit a sharp “Yip” or “Ouch” as soon as biting begins so that the puppy backs off. Remember, any contact with the skin should lead to an immediate cessation of play and attention. This sends the message to the puppy that the bites are painful and that biting will cause the end of play. Alternately, a sharp “Off” command and quickly backing away can be effective. Using a verbal cue such as “Yip,” “Ouch,” “Off,” or “Enough” is intended to interrupt the behavior and indicate that play and attention will now cease. This training usually works for those family members that are most immediate, consistent, and clear in their responses. If the puppy persists, chases or immediately repeats the behavior, closing a door and walking out of the room can help to teach the puppy that biting leads to immediate inattention.

What if my puppy keeps biting?

Other techniques are often suggested for play biting. Some involve harsh discipline, like slapping the puppy under the chin or forcefully holding the mouth closed. Remember, pain can cause aggression and cause the puppy to become anxious, fearful, defensive, or perhaps more excited. These techniques also require that you grab an excited puppy, which is not an easy thing to do! Some puppies may even misinterpret the owner's attempts at punishment as rough play, which in turn might lead to an increase in the behavior. Physical methods are not recommended. Owners who cannot inhibit the puppy with a yelp could consider a shaker can, water or air spray, noise alarm, or ultrasonic device as soon as the biting becomes excessive. The loud noise or spray is used to startle the puppy, which will likely back up and stop biting. When that happens the puppy should immediately be praised and gentle play and interactions resumed.

The use of a head halter with a remote leash attached allows the puppy to play and chew, but immediate pressure on the leash can redirect and successfully close the mouth and stop biting or chewing as soon as it becomes undesirable. By simultaneously saying "No biting," most puppies will quickly learn the meaning of the command. As soon as the puppy stops, the tension on the leash can be released. If the biting resumes then a gentle and immediate pull and release may be needed until the puppy remains calm, at which point the play can be resumed as long as biting does not begin again. This is one of the quickest and most effective approaches to stop the biting and get immediate control of the muzzle and mouth, and is useful for owners who are not gaining sufficient verbal control.

Remember that this kind of biting is a component of play behavior in puppies. Play is a form of social interaction and your puppy is practicing its social and communication skills. Realize that your puppy is trying to play with you, even though the behavior is rough. Play-motivated bites still hurt! Also remember that each puppy and breed has a different level of intensity or a slightly different form in which play is exhibited so try and match the length and type of play to the needs of the puppy. Be assured your puppy is not trying to dominate or control you. Your puppy needs adequate play and each puppy has different needs. Be certain that you are initiating attention and play often enough to meet your dog's needs. Hounds may enjoy games in which they use their nose to find interesting treats or just a long walk with opportunities to spend time with nose to the ground. Retrieving, agility, flyball, and even tug games with toys encourage play that should not lead to mouthing of the owners. If you allow your puppy to initiate all play and attention sessions with pawing, barking, jumping up, or mouthing, then these may escalate into more intense attention soliciting or even play biting if you subsequently try to ignore the behavior. On the other hand, if you teach your puppy to sit or lie down calmly in front of you prior to play then these behaviors can be rewarded. In addition, you should end each session abruptly if biting occurs. One strategy is to use a command such as "Sit" or "Down," and reward the behavior with a chew or feeding toy. Another is that if the play gets too rough and involves biting, immediately end the play session and leave. Social withdrawal can be a very powerful tool. Leave the puppy alone long enough to be confused by your absence. If upon your return the biting resumes, leave again. Your puppy may be as active, wild, or animated as you will allow but you are teaching it that biting doesn't have a place in your interaction with it. Although it is tempting to pick the puppy up and take it out of the room, your puppy may interpret this interaction as additional play and the biting may continue as you carry the puppy to a confinement location. Keep track of which types of play seem to get the puppy too excited and these should be avoided to help prevent biting behavior. Be sure to provide enough appropriate outlets for energetic puppies; if you aren't meeting your puppy's social, exploratory, and energy needs then these strategies will not work!

Can I play tug games with my puppy?

Games of tug and pull can be a good way for the puppy to expend energy while playing with family members. In this way the puppy can be given an acceptable outlet for pulling, biting, and tugging rather than on the clothing or body parts of people. The rule is the person should stop the game abruptly and socially withdraw anytime the puppy's teeth touch human skin or clothing or the puppy becomes overly excited and agitated. In addition, the tug-of-war game provides an opportunity to teach the puppy to give up toys on command. However, tug games are only acceptable if they remain under your control, if play biting and overexuberant play do not result in aggression, if the puppy's teeth remain on the toy rather than human body parts, and if possessive behavior does not develop over the toy. Select a few tug toys for playing this game and be certain that you are the one to start each session. It might be best to keep the toy(s) out of the puppy's reach until it is time to play the game and to use the game and toy as a reward for training, e.g., sit before play or retrieve. Throughout the play session, if the puppy gets too excited or begins to grab hands or clothing, immediately cease play and begin again only when the puppy is settled. Animation and exuberant play are acceptable; biting on people or their clothing is not! Food rewards can also be used at the outset to encourage the puppy to stop and give up the toy. At the end of each tug session, teach the puppy to give up the toy and reward with a favored chew or feeding toy. If successful, this type of play provides you with a means of controlled interactive play, as well as teaching the puppy to give up the toy on command.

Following each play session, give the puppy a chance to eliminate and some down time. Try and use a crate or confinement pen with object play toys (food-stuffed toys, chews) that have been saved for confinement time so that the puppy can play with the toys or take a nap until the next scheduled play, exercise, training, or elimination session is due.

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Products to manage undesirable behavior

There are a wide variety of products that can be useful in correcting or managing undesirable behavior in pets. Devices that are activated by the owner can be used to interrupt a behavior so that the desirable response can be achieved or may serve as a punisher so that the pet is less likely to repeat the act in the future. However, behavior is likely to continue in the owner's absence, especially if it is rewarding (e.g., garbage raiding), comforting (e.g., sleeping on the couch) or brings relief (e.g., elimination) since there are no unpleasant consequences associated with the behavior when the owner is not watching. Therefore remote punishment or avoidance devices (booby traps) might be more effective, so that the pet associates the punishment with the act, and not with the owner. Since pain, discomfort, and excessive fear compromise the pet's welfare, the minimum level of intensity required to achieve the desired outcome should be used and they should immediately be stopped if they cause excessive fear. However, before any of these devices are considered as a means of deterring undesirable behavior, you must first focus on: (1) how to train and reinforce alternative desirable behaviors; (2) how to cease rewarding undesirable behaviors; and (3) how to prevent rather than punish. Since positive punishment causes a decrease in behavior by making the pet fearful of repeating the behavior, punishment should not be used to "correct" behaviors that are motivated by fear or anxiety. In addition, if any of these products or techniques: (1) are ineffective in interrupting or stopping the undesirable behavior after the first or second attempt; (2) cause undue fear or anxiety; or (3) lead to threats or aggression, they should be immediately discontinued.

Disruptive stimuli

The goal of a disruptive stimulus is to interrupt the undesirable response. This allows an opportunity for the performance of a desirable response which can then be reinforced.

Remote punishment

This can be used to deter undesirable behavior without causing fear of, or association with, the owner. For example, punishment can be administered from a distance by using a remote-activated spray collar (lemon, citronella, or air). Timing must be immediate and the punishment should be withdrawn as soon as the behavior ceases. Garbage raiding, urine marking, jumping on counters, and coprophagia are examples of problems that might be corrected with a remote-activated device.

Pet-activated devices – avoidance

Environmental punishment or booby traps can be used to deter undesirable behavior or entry into restricted areas even in the owner's absence. The goal is for the pet to learn that the area or the behavior itself is associated with unpleasant consequences. Motion-activated alarms or sprays or unpleasant surfaces such as sticky tape or upside-down carpet runners are often used for this purpose.

Disruptors and punishment devices

Owner-activated devices

1. Direct devices can be used to interrupt undesirable behaviors (e.g., a pet jumping up) so that desirable behaviors can be reinforced or as a means of reducing repetition of behaviors that might be damaging to the house or unsafe for the pet (e.g., garbage raiding, stealing). Some of the commercial devices available include audible, ultrasonic, or spray deterrents. You can also use a "shake" can full of pennies, pocket rape alarm, or air horn as audible deterrents or a water gun or can of compressed air.
2. Remote devices provide a way to stop an undesirable behavior while the owner remains out of sight so that the behavior is discouraged without any association with or fear of the owner. These include remote-controlled citronella or scentless spray collars, and a remote-control vibrating collar that might be used as a positive signal to train deaf dogs. Something thrown on the floor near the pet (e.g., shake can or bean bag) may also serve to interrupt the behavior. Other products include long-range water rifles and remote-controlled switches that can be used to activate an alarm, hair dryer, water sprayer, or tape recording. By placing these devices in the area where the pet might misbehave (e.g., plant, garbage) and activating them with a remote switch, the pet might learn to avoid the area. To administer remote punishment at the right time, the owner will need to monitor from a distance while remaining out of sight; a web cam or pet monitor might be useful.

Pet-activated devices

1. Outdoor devices. Electronic containment systems can be used to keep dogs within selected boundaries, or away from selected areas. A transmitter wire is buried along the boundary, and a radio transmitter sends a signal that is received by the collar. As the pet approaches, there is first a warning tone, and then activation of a spray collar if the pet does not retreat out of range. Motion-activated alarms and sprays, ultrasonic deterrents, a motion-activated water sprinkler, and pet repellents can keep pets out of selected areas on the property (e.g., gardens) or stray animals off the property.
2. Indoor devices. Devices designed to keep pets away from areas (i.e., avoidance) include indoor electronic containment systems that activate a spray collar as the pet approaches as well as motion-activated sprays and alarms. Alarms and detectors designed for home security may also be effective. You might also find that a pet may avoid an area if you place down less appealing substrates (e.g., aluminum foil, plastic, or rubber mats) or uncomfortable substrates (e.g., upside-down vinyl carpet runners, double-sided tape) or spray the area with a pet repellent or chew deterrents such as hot sauces, menthol, oil of eucalyptus, cayenne pepper, or commercially available antichew sprays. Some pets, especially cats, may avoid areas with strong perfumes or citrus odors.
3. Dog and cat doors have been developed that will only open for the pet wearing the activation collar or "key." In fact, some can be programmed to be activated by the pet's microchip. Child safety locks, secure trash bins, barricades, and crates or dog pens can be used to prevent and avoid problems.
4. Bark deterrents: for a bark-activated device to be effective, it must immediately interrupt the barking, be sensitive enough to detect each undesirable vocalization, and specific enough that it is not activated by extraneous stimuli. Bark-activated, audible, and ultrasonic devices can be placed in areas where the pet might bark (window, front hall, cage). Bark-activated collars that deliver a spray of air or citronella can be worn by the dog at times it might bark. There are also ultrasonic and audible deterrent bark collars but these seldom appear to be effective. Bark-activated products should only be applied if they effectively stop the barking and the owner is present to reward the quiet behaviors that precede and follow barking. Vocalization that is due to anxiety (e.g., storm phobia, separation anxiety) should not be suppressed by a bark collar since, even if effective at reducing barking, it will likely increase, not decrease, the pet's anxiety.

Using rewards effectively

Reward-based training

The key to the effective use of rewards involves giving the reward immediately when the desired response is exhibited (contiguous) but only when the response is exhibited (contingent). For positive reinforcement to be effective, the reward must be given immediately following the desired response so that it increases the chance that the response will be repeated.

Reward selection and timing

1. Anything that your pet enjoys can be a reward. This can include treats, food, a toy, attention, play, affection, going for a walk, or even a rub of its head or belly as long it is given immediately when the behavior is performed and at a time when your pet wants it. Since there is a great deal of individual variation you must first choose the rewards that most appeal to your pet.
2. Whenever you give the pet something it enjoys, you are positively reinforcing whatever behavior the pet is performing at that time, whether desirable or undesirable. Therefore, never give a reward unless it immediately follows a behavior you wish to encourage. Therefore if the pet is exhibiting an undesirable behavior that you should not reinforce, ask the pet to perform another acceptable behavior or ignore it until it behaves acceptably and immediately reward that behavior.
3. Predictable rewards: rewards should be used only as positive reinforcement for desirable responses. The focus should be on owner consistency and predictability so that the pet learns what behaviors (e.g., sit, lie down) get rewards. Then when the pet responds consistently and reliably the owners can add cue words and gradually shape longer and calmer responses.
4. For some dogs, food rewards are more effective when the pet is hungry, such as around meal time. Therefore, if treats are not exceptionally appealing and your pet is fed free-choice, it might be better to switch to a feeding schedule. Training can be held just prior to meal times in order to increase the appeal of the rewards.
5. Reinforcer assessment: assess the motivating value of rewards and place them in order from most desirable to least desirable. Use your dog's most favored rewards or multiple rewards (reward jackpot) to shape and reward newer, more difficult, or more exact training responses and use lesser rewards for intermittently reviewing and rewarding previously learned responses or less exact responses.
6. Timing: dogs learn the fastest when the most valuable reward is given immediately following the desired behavior, every time the behavior is performed. Later, a switch to a variable intermittent reward schedule will help your pet continue to exhibit the desired behavior.
7. Secondary reinforcers: a clicker can be paired to a food reward by consistently sounding it just prior to giving the food until it becomes a conditioned stimulus for food. The value of a clicker is that it can then be used as a reward to mark correct responses immediately in a convenient and precise manner, with the food being given shortly afterwards. Other reinforcers such as praise or stroking may be sufficient to reinforce behaviors but may get more consistent responses if they are paired intermittently with a food treat.
8. Extinction: if you stop reinforcing a previously reinforced behavior, it will eventually stop being performed. This is often the best way to stop undesirable behaviors that have been reinforced by attention, praise, affection, or food (e.g., jumping up, barking). However, behavior problems that have been rewarded intermittently will take much longer to become extinct.

Cue-response-reward training

1. In simple terms, you need to give a cue prior to a behavior and then reward the desired response immediately and every time until the pet consistently responds. Begin the training in an environment with few distractions when the pet is calm. Start with simple verbal and visual (hand) cues, and gradually progress to more difficult cues in more difficult environments. Use mildly appealing treats at first, and save the highly favored rewards for later when the pet is giving more improved responses in difficult situations. This will encourage the dog to progress and improve. Alternately you can give a strong reward the first few times but then save them for increasingly better responses (longer, more relaxed, more distractions) later in training.

2. If the pet does not immediately respond to the cue then there are several possible explanations. The dog does not understand the cue, the dog has not heard the cue, or the motivation to perform an alternative behavior is greater (distraction). If you are sure that the dog understands the cue, then you could give no reward and wait so that the dog can decide how to respond or progress a little more slowly. Another option is to consider a physical control device such as a leash and head halter to guide the dog into the correct response physically.
3. Punishment should *never* be used for training. Punishment for incorrect responses may stop undesirable behavior but can lead to fear and anxiety, damage the bond with your dog, and will in no way encourage your pet to display the desired response.

Training with rewards: cue–response–reward

1. If a cue is paired with a response and there is immediate reward, the pet should learn the desired response for each cue. Once a response can consistently be achieved on cue, shaping can be used to progress to more difficult responses in a variety of environments.
2. Food lure training
 - (a) The movement of food is used to lure the pet into performing the desired behavior. Holding and wiggling the food in front of the dog should lure the dog into a “come,” while moving the food upward and back over the head should lure the dog into a “sit.” Moving the food down and slightly forward should lure the dog into a “down.”
 - (b) A cue word (command) is spoken only after the pet has performed the behavior several times. Then the word cue should be given as the pet is performing the movement.
 - (c) The food is given *immediately* upon completion.
 - (d) As training progresses, the lure is made less obvious by being presented in a closed hand, and quiet praise and stroking are intermittently substituted for the food reward.
3. Observe and reward
Observe the pet for desired behaviors and reward immediately. If a behavior can be anticipated, a cue can be given just prior to the behavior and then an immediate reward can be given once the behavior is completed. Some dogs can learn to eliminate on cue with this technique.
4. Physical prompt and fade
Give a verbal and/or visual cue as you use a prompt such as a head halter or hand prompt (e.g., guiding the pet into a sit position) to get the desired response, and then reinforce. Over time, the prompt can be faded (i.e., gradually removed).
5. Shaping
Determine the desired response and reward behaviors that approximate the response. Once successful, only behaviors that are slightly closer to the desired goal are rewarded, while less accurate responses are no longer rewarded.

Punishment

1. No physical punishment should ever be used. *Never* hit the pet, throw it on its back, shake it by the scruff, push the lips against the teeth forcefully, or use any other type of physical correction.
2. If you observe the pet doing something that is undesirable, interrupt the behavior in a manner that is sharp, startling, and strong enough to stop the undesirable behavior immediately without causing the puppy to be anxious.
3. After interrupting the undesirable behavior, you should guide your pet into the proper behavior and reward it immediately.
4. A leash and head halter can be used to guide the dog into position, and a release of pressure and positive reinforcement given for success (Figure 4.13).
5. If the undesirable behavior occurs when you cannot interrupt and guide your pet into the proper behavior, then you will need to look at ways to prevent the behavior occurring rather than punishing the behavior.

Training a dog to settle or relax

An important training exercise is to teach a dog to settle down or relax on command. For calming and settling a dog as a training command (e.g., steady, look, focus), the goal is to teach the dog to focus on the owner. Another form of settle (go to your mat) is intended to calm a dog that is overly anxious, aroused, excitable, or fearful in the home. Dogs should also be taught a relaxed walk on loose leash to help maintain a calm demeanor when outdoors on walks.

Once the dog has learned to settle, the command can be used to help achieve a calm response during the correction or management of a wide variety of behavior problems. It can be used to get the dog to focus when it might be overly excited or anxious in greeting family members, strangers, or other animals. It can also be used with dogs that become anxious as the owners prepare to depart or become overly excited when company arrives or when preparing for a walk.

Training a dog to settle and focus should begin in an environment where your dog is calm and there are minimal or no distractions. The owners will need to be able to cue their dog to settle with lure training or a leash and head halter, or by watching and observing the pet until it is sufficiently settled and marking the behavior with an immediate reward (such as with a clicker). Pets on a structured interaction program (see handout #13, available online) can be taught a settled sit or down each time they want attention or affection by waiting for the desired behavior and giving immediate attention as soon as the pet shows a settled sit or down. A cue (hand signal or command) is then added to be able to repeat the behavior reliably in a variety of situations and environments. Food, affection, or a favored toy can all serve as rewards if they are consistently given immediately following the behavior. You will need to be able to read and monitor canine body language and behavior (breathing, body postures, facial expressions, and the absence of any signs of anxiety) to be able to shape gradually more relaxed behaviors of increasing duration.

Calming exercises for any location

1. Teaching “steady”

- While standing still, give the pet 1 meter (3–4 feet) of the leash. If the leash remains loose, occasionally give it a food or social reward and say “steady.”
- When the pet starts to walk away, the “steady” command is given. As the pet gets to the end of the leash and starts to tug and pull against the leash, a final “steady” command is given followed by a gentle pull on the leash to get the pet’s attention. Then return the slack on the leash as a reward.
- If the pet remains on loose leash, immediately give a treat or affection as a reward.
- After several repetitions, the pet should learn that it is rewarded for maintaining a loose leash.
- Practice a couple of times a day in the home with few distractions. As the pet gets better, gradually add distractions and start working outside.
- Progress to walking on loose leash using “steady” whenever your dog begins to pull or put tension on the leash. Give rewards after each short stretch that your dog walks without pulling and gradually make the walks slightly longer before rewards are given. If necessary, stop and begin again when the leash is slack; however, over the long term, the goal is for your dog to walk calmly by your side for some or all of its walk.
- This can also be used to stop tugging and pulling on the leash while walking or to get the pet to stand calmly when meeting or greeting visitors.

2. Teaching “look” or “focus”

- Show your dog a favored toy or treat and then hide it behind your back. Have your back against the wall or be in a corner so the dog can’t get behind you. An alternative method is to hide the treat in your closed hand in front of your chest in a line between your dog’s eyes and your eyes.
- Say “look” or “focus” and as soon as your dog stops its attempt to get the treat and makes eye contact, use your reward word or clicker and give the treat. Repeat to improve consistency and immediacy.
- Gradually increase the amount of time you require eye contact to last and then start adding distractions in the background like people playing or a fridge door opening. Your dog only gets rewarded after maintaining (i.e., not breaking) eye contact with you. Once the dog is consistent in giving the correct response even when there are distractions, go to other places (outside) and add mild distractions, such as another dog nearby or children playing. After each successful session gradually increase the distractions and work in busier environments.
- The goal is for your dog to maintain calm and steady eye contact for several minutes, regardless of the amount of distraction and background activity. If the dog is focused but arousal is high, gradually work to shape calmer responses.

3. Teaching “settle” in a down position

- Another method is to use food lure training to train the dog to lie down in a relaxed position, on its belly with both hind legs on the same side. If the pet is excited, barking, or unsettled, wait until it is calm to give the reward. Timing is everything, so clicker training can be a useful tool to achieve increasing relaxation. Reward progressively longer downs and more relaxed postures.
- Gradually progress to longer down stays in a variety of environments and then gradually increase the background noise and distractions.

4. Head halter training

- The head halter can be used concurrently with lure–reward training, or by itself, to teach the pet to assume a relaxed position.
- The head halter is used immediately following the command to get the dog to focus and gently pull or prompt it into the settle position (steady, focus, down).
- As soon as the pet relaxes, the tension on the leash is relaxed and a favored reward is given.

Indoor exercises

Although any of the above exercises can also be used for training a dog to be calm indoors, there are additional techniques that might help the dog to settle down quickly and effectively when indoors. These techniques can be used to help reduce anxiety associated with owner departures or fearful stimuli such as thunder, as well as to calm dogs that are unruly and excitable or overly aroused when visitors come onto the property or enter the home (see client handout #25, available online).

1. Teaching a settle location

- Training the dog to settle indoors can sometimes be more easily accomplished by using a settle area. The dog can be taught to “go to a mat” or “go to a kennel” where it learns to stay calmly for progressively longer periods of time for affection and food rewards and food-stuffed toys or chews.
- Food lure training, with or without the aid of a head halter, can be used to achieve the initial response. The dog is taught to stay calmly for progressively longer periods of time before the reward and affection are given.
- At first the owner may need to take the dog to the area to ensure success, but as the training progresses, the dog should learn to go to the area on command to receive its rewards.
- If the dog is also taught to sleep in this area and favored toys are kept in the area, it may soon learn to go to this area to relax on its own.
- Additional tools to help ensure effective timing of rewards include clicker training (where the dog can be rewarded immediately whenever it lies in the area and then for progressively relaxed behaviors) or a Manners Minder, which can be set up in the dog’s settle location to deliver rewards remotely.
- Once the dog will go to the area and settle on command, training should progress to situations where the dog is slightly more aroused, such as when there are stimuli outdoors, company arrives at the door, or when practicing departures. A leash and head halter left attached can help ensure success.

2. Settled sit or down stay

- Teaching a dog to a settled sit or down is discussed above. In addition, see our handout on structured interactive training (client handout #13, available online) which refers to structured interactions in which the dog must learn to sit or lie down prior to any affection or rewards being given. Since structured interactions and predictable consequences give dogs control over their rewards, this is an effective way to teach these behaviors and reduce underlying stress or conflict.
- In effect, this means that there are three ways to teach the focused sit and relaxed down: (1) lure–reward training, as described above; (2) head halter training to prompt the desired behavior; and (3) avoiding all interactions until the desired behavior is observed and immediately rewarding the behavior with affection, treat, or clicker/treat. Once the behavior is achieved, the cue word or command should be added to put the behavior under verbal control.
- The balance of the training involves monitoring facial expressions, body postures, and breathing to be able to shape progressively more relaxed behaviors.
- Training should then progress to longer sits and down stays in a variety of locations, and then adding background noises and distractions.

Unruly behaviors in dogs

Jumping up

1. Whenever the young pet walks up to a person, it should not get attention or rewards of any type unless it sits (say please). See Handout 13 on web.
2. The key to changing any behavior is consistency and timing. Jumping up on people should not be allowed at any time. Appropriate behavior should be calmly and immediately rewarded.
3. Avoid accidentally encouraging or rewarding unwanted behavior. Any attention, including eye contact and even discipline, can reinforce behavior by giving attention.
4. Train your dog to exhibit an acceptable response at greetings. You can use "sit," "down," or "go to mat" commands when people enter the home. Encourage and reward the desired response.
5. If the pet begins to jump up, immediately stop eye contact and turn away. Interrupting the behavior with a "no" or "tssk" might stop the jumping but should not be used if it causes fear or avoidance. A head halter with leash left attached is a more effective way to interrupt jumping immediately and get a successful sit.
6. If your pet has already been inadvertently rewarded for jumping on visitors, you will need to set up training sessions with a series of repeated greetings.
 - (a) Ask a friend or family member to knock or ring the doorbell. Instruct the person to avoid eye contact, touching, or talking to the pet when the door is opened until the pet is in the desired position for greeting, e.g., sitting, lying down.
 - (b) If the pet knows commands, ask for the desired behavior. Otherwise, lure the dog into position with a toy or treat, or leave a leash and head halter attached to get an immediate and successful sit. If the dog remains sitting, the person can lightly stroke the dog while continuing to give treats.
 - (c) Completely ignore the pet if it jumps up. Get the pet back into the desired position (by command, lure, or head halter) and have the visitor try additional low-key greetings until successful.
 - (d) Ask the person to leave and repeat the entrance and greeting.
 - (g) All family members should be consistent about rewarding desirable behavior and avoiding any attention for jumping.

Getting on the furniture or into rooms where the dog is not allowed

1. Once rules are established regarding what the pet is allowed to do, all family members must consistently follow the rules.
2. Desirable behavior should be encouraged and reinforced. Provide acceptable locations for your pet to sleep and play with its toys. Reward and encourage use of these areas.
3. If you are sitting on furniture and the pet approaches, ask it to sit. Give it a toy to keep it occupied while it remains on the floor.
4. If you are supervising and your pet attempts to get onto the furniture or into an off-limits room, it must be interrupted or deterred as soon as the behavior begins.
5. Physical punishment should be avoided. Rather, an immediate unpleasant disruption such as a verbal "no" or "off" or a noise (such as a shake can, ultrasonic or audible alarm) can be used, provided it stops the behavior without causing fear. Leaving a leash attached to the dog's head halter or harness can immediately stop the behavior with a properly timed pull.
6. Whenever you cannot supervise, your dog must be prevented from getting on the furniture or going into rooms that are out of bounds. The easiest way to do this is to confine the pet by using baby gates or confining to a crate, pen, or room. Booby traps such as motion-activated sprays and alarms, spray collars that are activated when the pet goes near the "transmitter" device, and alarm mats may deter some pets.

Raiding garbage or stealing food

1. Training the dog to stay away from garbage cans or food that has been left on a table or counter may be extremely difficult if the dog is highly food-motivated and the area is accessible.
2. If you are available to supervise your dog, you can prevent access to the food or garbage by using a sharp "leave it" command as it approaches the food or garbage. Leaving a long leash attached to the dog's harness or head halter provides a means of physical prevention which can immediately follow the "leave it" command if the dog does not walk away.
3. If your dog has previously stolen food from the trash or off the counter or table, the high-value reward the pet has received will encourage further attempts. Therefore when you cannot supervise, the best advice is to keep food or garbage out of the pet's reach, or in inaccessible areas and dog-proofed containers. Safe confinement can be used to keep the pet away from food and garbage. Booby traps (mentioned above) or bitter-tasting repellents can also be used to keep pets away from areas, but if food is involved the potential benefit to the pet may be too strong to overcome with avoidance training.
4. Be sure the pet is receiving adequate amounts of food each day so it is not hungry. If it is too lean, increase the amount that is fed. If the pet's weight is normal, switch to a low-calorie diet so the volume can be increased.

Teaching "Leave it"

Teach your dog to turn away from a treat

1. Start with your dog sitting or lying down facing you.
2. Place a treat in your hand and make a fist.
3. Offer your fist, palm side up, to your dog with at least 30 cm (12 inches) of space between its muzzle and your fist. Do not move your hand towards your dog or say anything. Your dog will sniff, snort, lick, suck, and paw at your hand. Be patient.
4. As soon as your dog takes its nose away from your hand, even for a nanosecond, *immediately* open your hand, praise it, and let it eat the treat.
5. Repeat steps 2–4 until your dog no longer moves towards your fist as soon as you present it. This may take seconds, minutes, or several sessions, depending on your dog. When you present your fist and your dog sits still, backs away, or looks away, you are ready for the next step.

Add a verbal cue (command)

6. Say "Leave it" in an upbeat tone and immediately present your fist as before. If your dog does not move towards your fist, backs away, or turns away, *immediately* open your hand, praise, and let the dog eat the treat. If it sniffs or mouths, calmly withdraw your hand (do not jerk your hand away quickly), wait a few seconds, and try again. When your dog responds to "Leave it" correctly when you say it, you are ready for the next step.

Increasing the difficulty

7. Say "Leave it" and present your fist, then count to three. If your dog does not approach, turns away, or backs up, praise, open your hand, move it toward the dog, and let it eat the treat.
8. Repeat step 7 again and again until you have increased the amount of time that your dog waits for the treat to 5 seconds. Now that your dog has learned to respond to the cue "Leave it" by not touching your hand with its mouth for 5 seconds, it is ready for the next step.
9. Say "Leave it" and present a treat in your *open hand*, at least 30 cm (12 inches) away from its muzzle. If your dog does not try to get the food, praise it, and give it the treat. If it tries to get it, just close your hand. When it backs away, looks away, or turns away, repeat this step by again presenting your open hand with a treat in it while saying "Leave it." When it backs away, looks away, or just doesn't come forward, praise, move your hand towards it, and let it eat the treat.
10. Repeat step 9 until the dog will sit quietly for 5 seconds while you hold a treat in the palm of your hand. Now you are ready for step 11.

Generalization (making it work for other objects)

11. Place an object on the floor that your dog is not that interested in (e.g., heavy pot, book). Allow your dog to sniff it for a second, and then ask your dog to "Leave it." When it does, praise and toss a treat about 30 cm (12 inches) away. Repeat this step again and again. Eventually, most dogs will lose interest in the item entirely and just sit and stare at the owner instead of going back to the item. When this happens, reward the dog for sitting and end the session.
12. Repeat step 11 many times with a wide variety of items. You might be able to move through multiple items in one session or you may only be able to get through one. Keep the value of the item low. For example, if your dog guards bones, don't practice with those. You must get many successful repetitions in before you can practice with a high-value item. Practice "Leave it" throughout the day when your dog shows interest in something, even if it is something that it can have. Remember, you are just trying to get repetitions in so that you can practice. For example, if you are on a walk with your dog and it is sniffing the grass, tell the dog to "Leave it." When the dog picks its head up, reward it. Then let it go back to sniffing. If it is carrying a toy in the house, ask it to "Leave it." When it drops the toy, reward it and let it pick it back up. Continue in this way until the dog becomes very proficient at dropping things and lifting its head when it is sniffing things.
13. Finally, it is time to use "Leave it" with the items that cause your dog to react. Make sure that the treats that you have are better than what your dog has. Hold a toy that it has previously guarded, but can have (not a stolen item). Hold it in front of you and tell the dog to "Leave it." Reward the dog if it hesitates, looks at you, or stops its forward movement. Toss the treat about 60 cm (2 feet) away and start over. Practice for 1–2 repetitions and then give the dog the item in its safe place. Do this once daily until the dog doesn't go toward the item at all.
14. When the dog is proficient at this, start to put the item on the floor. When you tell the dog to "Leave it" as above and it does, toss the treat about 60 cm (2 feet) away and pick the item up. Then repeat the exercise. After two tries, give your dog the item in a safe place.
15. Practice, practice, practice!

Teaching "Watch"

1. You may begin this exercise with your dog standing, sitting, or lying down in front of you. You may be standing or sitting.
2. Start with food in both hands. One hand (your dominant hand) should have one piece of food in it. The other hand should have multiple pieces. Your dominant hand should be at your side and your other hand behind your back. Say "Watch" as you bring the hand with the food up to your eyes. Your dog will most likely follow the food and look up at you. When it does, praise and hand a treat from your nondominant hand.
3. Repeat this exercise many times over several sessions. When your dog follows your hand each time, you are ready for the next step.
4. Practice the same way, except take the food out of your luring hand (the one which is moving). Continue to lure with your empty hand and reward from your other hand. In other words, you are practicing in the same way that you did in step 2, except your luring hand is empty. When this happens, praise and give the food reward. Some dogs will begin to look back and forth from the hand with the food to your face. Be silent and still. When your dog commits to looking at your face, praise enthusiastically and give the food reward. When your dog is successful at this step, you are ready for the next step.
5. Begin by luring your dog with your empty hand as you have been for 4 or 5 times, while saying "Watch." On the sixth try, say "Watch" without moving your hand. If your dog looks at you, praise, reward, and end your session. If your dog doesn't look at you, follow the instructions for dealing with this type of behavior in step 3.
6. Lure your dog once or twice and then say "Watch" without moving your hand. When your dog looks at you, praise and reward. Continue with the training session by saying "Watch" without moving your hands.
7. Begin by asking your dog to "Watch" without any hand movement. Remember to reward all successful attempts.
8. Continue as described above, slowly increasing the amount of time your dog has to look at you before receiving the reward during each training session until your dog can maintain eye contact with you for 10 seconds.
9. Say your dog's name and "Watch" when your dog is turned away from you, but still within 50–100 cm (2 or 3 feet). When your dog looks at you, praise enthusiastically and reward generously. If your dog doesn't look at you, get closer and use the food lure to get the dog to look at you. Repeat this step until you don't have to lure the dog any more.
10. Begin to practice in different places in your home, outside, and in new places.

Basket muzzle conditioning

1. Start by sitting in a chair and ask your dog to sit in front of you. Do not bend down, over, or toward the dog.
2. Smear the inside of the basket muzzle with a small amount of dog food, cheese spread, meat spread, squeeze cheese, or peanut butter. Hold the muzzle and let the dog lick it out.
3. When your dog has licked the muzzle clean, put more treats in and continue. When your dog is pushing its nose into the muzzle immediately to get the food, go to the next step.
4. Allow the pet to lick food out of the muzzle. While your dog is licking the food out, gently put the straps around the head and hold them there for less than 3 seconds while your dog eats. If your dog backs away, pull the muzzle toward you slightly and offer it again. Do not push the muzzle toward your dog.
5. Over multiple sessions, slowly increase the amount of time that you hold the straps and slowly progress to buckling and securing the muzzle.
6. Once you can buckle the muzzle, continue to feed your dog by pushing food through the openings of the muzzle for a few more seconds, then remove it.
7. Over the course of many sessions, gradually increase the time that your dog is wearing the muzzle.
8. The goal is for your dog to wear it for 10–15 minutes at home before you use it in stressful situations.

Management of separation anxiety

Step	Description
Reward independence	• Teach independence by having your dog rest on a bed or mat with no physical contact. Give treats or toys to keep your dog occupied and gradually increase the length of time and then move further away (ideally into a different room) • Provide structured interactions. Only give the pet attention when it is calm. Ignore attention-seeking behavior until the dog lies down or goes to its mat (see client handout H13) • Use the same rule structure for all rewards – give treats, play toys, food, play only if the dog sits or lies down. Gradually train a longer sit, down, or stay before any reward given • The goal is to have the dog learn to cease all attention-seeking and to sit, lie down, or go to its bed or mat before any reward is given • When your dog approaches for attention, you can use cue words or commands to train your dog to sit, lie down, or go to its mat; however, until these are effectively learned you could: (1) ignore your dog until it offers the behavior; (2) lure the pet with a food or toy reward; or (3) use a head halter to prompt the behavior gently. A clicker or Manners Minder can aid in immediately rewarding and shaping gradually more settled behavior in a select location • Practice each day to increase gradually the length of time your dog settles before rewards are given
Never punish	• Punishment will increase fear and anxiety
Departure cues	• Expose your dog to the cues that are usually associated with departure, e.g., lifting keys, putting on coat, open and shut doors, open garage door without departing until the dog habituates (i.e., these cues no longer predict departure) • Adapt your dog to the departure routine while you are at home (e.g., leaving in crate or kitchen) so that it no longer predicts departure • Depart when your dog is occupied for 15–20 minutes (e.g., special toys, mat, music) and avoid exposing to cues (e.g., go out different door, avoid garage door by keeping car in driveway). Leave unnoticed • Cues that are commonly associated with calmness and your presence might reduce anxiety, e.g., TV, radio, DVD left on
Greetings	• Homecomings should be kept very low-key and your pet should be ignored until it is calm
Social/exercise	• Provide interactive times regularly throughout the day to ensure sufficient aerobic exercise, social time, play, and additional training • Before training inattention and independence, ensure sufficient social time, play, and aerobic exercise have first been provided • Maintain structure and predictability by consistently training the pet that sit, down–stay, or going to its bed (and not attention soliciting) are the behaviors that must be displayed before any reward is given

Step	Description
Departure training	• After your dog has been desensitized to the departure cues, practice short mock departures • The mock departure is a trial for actual departures so give exercise and social time, then take your dog to its resting area, and give high-value toys. Use a unique cue. Add a special non-departure cue that is unique to these training sessions (such as music, CD or a sign on the door) so that the pet learns when to remain calm. After 15–20 minutes, while the dog is resting and occupied, leave for anywhere from a few seconds to a few minutes and return. The duration should be shorter than the time in which it takes the pet to show signs of anxiety. Periods can be lengthened gradually as the pet responds without associated anxiety • The duration of departure should be lengthened on a variable schedule, so that the pet cannot predict exactly how long the owner will be gone. Use the special (non-departure) cues to predict these short departures (and not for actual departures)
Distractions	• Give highly stimulating toys and chews 15–20 minutes prior to departure and take up when home. Give these toys and chews only when practicing independence training, mock departures, and actual departures, but give the highest value and greatest number for actual departures • In rare situations, having another pet will provide a playmate or distraction
Confinement	• Confining your pet may result in increased anxiety unless the pet is accustomed to confinement while you are at home (crate, child gate, room, pen, tied down). Acclimating the pet to confinement should be done gradually using food and chew toys. Allowing your pet to choose its own desirable resting site and then rewarding its use can improve compliance
Pheromones/ drugs	• Fluoxetine a selective serotonin reuptake inhibitor (SSRI) or clomipramine a tricyclic antidepressant are licensed products for dogs that have demonstrated efficacy in conjunction with a behavior program or 2 to 4 months. Other SSRI's or TCA's might be an alternative but no trials have been done to validate efficacy. • Dog-appeasing pheromone Adaptil (formerly DAP) might be beneficial alone or together with drugs. • Benzodiazepines, such as alprazolam and diazepam, clonidine, or trazodone, might be used concurrently with SSRIs on an as-needed basis prior to departures but use of these drugs is off label • Selegiline might be considered for chronic anxiety disorders but not concurrently with SSRIs or TCAs
Monitoring	• To assess the pet's behavior when out of sight or away from home, monitor with a video recorder or monitor (e.g., PetCam)

Steps for optimum social development of puppies and kittens

1. Choose breeding animals that exhibit desirable social behavior
2. Select pets that have been raised in a domestic (home) environment by their mother
3. Choose pets that have had handling and early stimulation (rather than isolation and avoidance)
4. Provide opportunities for socialization with humans and other species prior to the end of the socialization period
 - Optimum age for canine pet adoption may be 7–8 weeks (less inhibited, before the fear period)
 - Optimum age for feline pet adoption is prior to the end of primary socialization at 7–9 weeks
5. Habituate to as many stimuli and environments as practical during the early months of life
6. Consider all people, animals, stimuli, and locations to which the pet may be exposed at a later age but are not presently in the environment and seek out exposure. Be particularly diligent about exposure to children, the elderly, or people who are physically or behaviorally different from family members
7. Avoid excessively fearful situations and exposures – monitor the pet for any emerging signs of fear and keep all meetings and greetings positive. Use toys or treats for a positive association
8. Continue exposure to conspecifics into adulthood to maintain healthy social relationships
9. Consider puppy and kitten classes for early training and socialization in a controlled environment

Suggestions for environmental enrichment for dogs

Sensory enrichment

These might include a radio, television, or DVD, toys that squeak, and foraging devices.

Feeding

Small stashes of food hidden around the home in small containers can stimulate hunting and feeding behavior. Fresh fruit and vegetables can be provided for the pet to gnaw on. Meat, canned food, or other flavorings can be added to water, and then frozen in a plastic container. Cubes of meat or pieces of shrimp (prawns) can be frozen in cups of water. Treats or kibble can be placed in plastic water or soda (soft drink) bottles for the pet to knock around and empty. Food can be scattered on the floor or deck or in the grass in the yard to make the dog search for each piece. A food dispenser that uses a timer to dispense food at intervals can be used to stimulate the dog throughout the day. In fact, instead of feeding from dishes, dogs can work for some or all of their daily food. Pieces of food can be tossed down the hall, up the stairs, in the kennel or around the yard for the dog to chase.

Manipulative toys and objects

A wide variety of toys are available from commercial companies. Many dog chew toys are made of durable rubber and may have grooves or holes where chew products, food, or treats can be stuffed (Figure 4.8). Safety and characteristics of toys that are interesting to the individual pet will determine which toys are appropriate. Toys should not be so small or fragile that they can be chewed and swallowed, nor so hard that a tooth could be broken. There are many toys available that are designed to be stuffed, coated, or filled with food, treats, or chews and require some form of manipulation to dispense the food. Freezing the food in the toys will increase the time the pet spends with it. Other toys are designed to be moved around so that dry food or treats will fall from openings in the toys (Figure 4.9). Rabbit, quail, and other "wildlife scents" (available from sporting goods stores) can be smeared on toys to increase their appeal; however, care should be taken with some dogs that it does not increase predatory instincts. Sturdy, fleece toys that can be grabbed and shaken are very appealing to some dogs and can satisfy a need for predatory play. Squeak toys produce a high-pitched, prey-like noise that appeals to many dogs. Periodically rotating toys in and out of the pet's environment will recharge the novelty of the toys.

Consider feeding most of the daily food from toys. Articles of clothing and household items (such as shoes, old towels, and blankets) should not be used for play as some pets will generalize their chewing to possessions that the owner does not want damaged. Other family possessions that might appeal to the puppy must be kept out of reach.

Play

Retrieving, tug of war, flying discs, or playing games with soccer, hockey, or football toys are enjoyable and stimulating ways for the owner and pet to interact.

Environmental

A doggie door allows the pet to get out during the day. A small wading pool (if supervised by family) can be provided for the dog to splash in. Toys can be buried in a sandbox or a sand-filled digging pit for the dog to dig out. Large plywood boxes and tunnels can be placed in the yard for the dog to crawl through and on top of. A tire or inner tube can be attached to a tree limb for the dog to grab and tug or chew. New environments should periodically be visited with the dog to explore. When opportunities to play and exercise with the family are limited the pet can be taken to day care.

Social

Provide another pet (same or another species) for social interaction and exercise. Visit the pet during lunch breaks. Hire a dog walker. Ask friends and family members to stop by during the day to interact with pet.

Training

There are all types of training that families can do with their pets, many of which they may not be aware. Obedience, flyball, scent, Frisbee, agility, tracking, lure coursing, earthdog trials, weight pulling, herding, musical freestyle dancing, trick and other types of training are activities the pet might enjoy but care should be taken so that the dog is not overstimulated or anxious during classes.

Suggestions for environmental enrichment for cats

An enriched environment for a cat offers a wealth of resources spread throughout the home that offer outlets for species-typical behaviors. Resources can include watering and feeding sites, elimination sites, scratching sites, resting/perching sites, toys and play activities.

Sensory enrichment

These might include a radio, television, a DVD of animals, toys that squeak or are enhanced with catnip if the cat is responsive, as well as foraging devices. When choosing DVDs for cats, ensure that the subjects are prey or socially amicable cats to avoid potential redirected aggression.

Feeding

Toys are available that can be filled with canned food and cheese for the pet to empty. Freezing the food in the toys will increase the time the pet spends with it. Other toys are designed to be moved around so that dry food or treats will fall from openings in the toys, such as the pipolino, FunKitty, or Kitty Kong toys (Figure 4.10).

Food can be delivered in a variety of creative ways to simulate hunting behavior. Small stashes of food can be hidden around the home to provide a food scavenger hunt for the pet. The family can have food-tossing sessions during which a piece of kibble or treat is tossed down the hall, up the stairs, or into a kennel for the cat to chase. Treats or kibble can be placed in plastic water bottles, cardboard milk containers, or soda bottles from which the pet can rattle out treats. A food dispenser that uses a timer to dispense food at intervals can be used to stimulate the cat throughout the day. Kitty drinking fountains can provide an interesting addition to the environment for some cats.

Manipulative toys and objects

Most young cats seem to enjoy stuffed toys that can be attacked. Adding catnip to the toy may increase the cat's interest. Some cats may be particularly interested in toys that must be rolled about or moved to release catnip. Ping pong balls, walnuts, and other toys can be provided for the cat to pounce on. A few small holes can be cut in a plastic water bottle containing some treats. The cat will roll it around to get the treats to fall through the holes. Feather or rubber toys on flexible wires that twist about are other good choices. Some cats find certain bird and dog toys appealing. Raw hide strips and other dog food chews can be used to keep cats busy. Rotating the availability of toys may increase their novelty and interest.

Play

Toys and games should address the cat's innate behaviors. Cat toys that dangle from a door handle or scratching post and those mounted on springs can provide good outlets for play. Toys suspended from strings and animated by a fan and battery-operated toys will entertain most cats. Mobile-like toys that sway and bounce when swatted are good choices for some cats (Figure 4.8). String and thread should be kept away from cats between play sessions, and all toys should be large and sturdy enough that they cannot be broken or ingested. Interactive play, however, can be the best outlet for most cats' needs. Hands, fingers, and toes should never be used to encourage play.

Environmental

The cat's environment should be set to satisfy each cat's specific needs. Multilevel resting areas can be particularly important in multicat households. "Cat shelves" can be mounted on walls that allow cats to explore multiple levels in the home, and perches can be set up at windowsills, on bookcase shelves and appliances. Kitty condos also provide resting, play, and exploration areas. Sunny locations are good choices for perching areas. Bird and squirrel feeders can be set up for the cat to watch, provided it does not increase arousal or frustration. Cardboard boxes and paper bags can be placed around the home to encourage exploratory behavior. Catnip caches can be hidden around the home for the cat to seek out and enjoy. Some cats will be entertained by videos of wildlife or fish in an aquarium. For cats that enjoy chewing on fresh greens, gardens of sprouted wheatgrass or catnip can be provided. Objects for the cat to scratch should be provided, including rope, carpet, and sisal-covered posts, fireplace logs, and commercial cardboard scratching pads. Some cats may like vertical areas to scratch, while others may prefer horizontal objects. While it is safer to keep the pet indoors, some cats can be confined to the yard using special types of cat fencing.

Social

Provide another pet – same or another species – for social interaction. People interactions are also important.

Training

Using food lure reward training, most cats can be trained to sit and come on cue as well as a wide variety of tricks.

Things the family can do for the “picky” eater

1. Moisten dry food with warm water or add some canned food
2. Most dogs prefer the flavors of beef, chicken, pork, or lamb rather than vegetable protein such as soy, corn, and wheat, while some may show a strong preference for fish. Choose a food that provides these more desirable ingredients. Cats prefer beef, chicken, fish, and pork; select these ingredients for finicky cats
3. Warming the food can enhance the flavor
4. Add flavor enhancers to the diet, such as liver or poultry broths, bouillon cubes, or commercial gravy products and food enhancers for pets
5. Add very small amounts of cooked garlic to the food (large amounts can be toxic to both dogs and cats)
6. Add fresh fruit purées as a dressing on the food. Mashed apple or banana is a good choice to try first or add small amounts of artificial sweeteners such as aspartame. Avoid raisins, grapes, and xylitol which can be toxic
7. Mix in a small amount of a freshly cooked protein (e.g., hamburger, liver, chicken, fish). Slowly wean them off the fresh-cooked food to the lowest amount that is necessary to maintain appetite
8. Try foods of different flavors and texture (e.g., pumpkin). While novelty appeals to many pets, some will avoid anything new
9. Limit treats. The picky pet may be filling up on treats instead of eating its meals
10. If the pet is finicky because a new diet is being introduced, add small amounts of the new diet to the previous diet, then gradually increase the proportion of the new diet
11. Identify whether stress is a factor in reducing anxiety and treat with appropriate environmental management, behavioral management, and drugs where necessary
12. For hospitalized cats, provide the cat with its own carrier. Synthetic facial pheromone may increase food intake

Adapted from Ackerman L. What every dog owner, breeder and trainer should know about nutrition. Alpine Publications, Loveland, Colorado, 1996.

Behavior modification for dogs with fear and phobias toward noises and locations

There are many different stimuli that can frighten your dog. This handout is designed to develop a program for improving or resolving fear of inanimate stimuli such as places, noises, or objects. When the fear is severe, it may be too intense for your dog's well-being and impractical for you to improve without combining a drug or natural supplement with the behavior program. Once a pet becomes fearful of something, that fear can be generalized so that it occurs in response to a variety of other noises, locations, or unusual situations. In addition, each exposure to the fear-eliciting stimulus with a negative outcome further increases the fear. Therefore avoidance is essential until improvement can be made.

Treatment of fear

In simple terms, the pet must be exposed to the fear-evoking stimulus at a great enough distance or reduced volume that it is not fearful. If the association with the stimulus can be turned into one that is positive, the pet may develop a positive attitude to the stimulus.

Desensitization is used in combination with counterconditioning to change a pet's attitude or "feeling" about the stimulus from one that is negative to one that is positive. Desensitization involves controlled exposure to situations or stimuli that are weaker or milder than will cause fear. Counterconditioning is then used to change the dog's response to the stimulus by associating something the dog likes with each exposure to the stimulus. The dog is then gradually introduced to similar but progressively more intense stimuli paired together with the presentation of something the dog really likes. If an inappropriate response (fear, escape attempts, aggression) is exhibited then an attempt should be made to distract and calm the dog, or remove the dog to a distance or location where it can be successfully calmed.

Response substitution involves training the dog to behave in a calm and relaxed manner (sit, settle, go to a mat, walk on loose leash) and then engaging it in a behavior that is incompatible with the fear response for rewards when exposed to the fear-eliciting stimulus. Response substitution is likely to be effective if the dog is consistently responsive to the training and the exposure to the fear is at a low enough level that the dog can be successfully cued to respond to the command. A head halter and leash can be used to ensure success and high-valued rewards (clicker training may be helpful) used to mark and reinforce an acceptable relaxed response.

Any exposure to the fear-eliciting stimulus before you are able to calm your dog will worsen the fear and anxiety. Be certain stimuli are well controlled, and mild enough so that your pet is less likely to be reactive. Do not plan any exposures unless you are confident you can achieve a positive endpoint. Since a dog's response is also influenced by your emotional state and the behavior of the people or other animals to whom your dog is being exposed, any threats, agitated behavior, or punishment will further aggravate the problem.

Steps for treating a pet that is fearful of inanimate objects and sounds

1. Know the signs of fear: Identify all stimuli and situations that cause the pet to be fearful. Remember that multiple stimuli may add to the fearful response so that each stimulus should be identified separately. For example, a pet that is fearful of a vacuum cleaner might be afraid of the sound, sight, or motion of the vacuum cleaner. Pets fearful of thunder may also react to the rain, lightning, darkness, barometric pressure or electric charges.
2. Prevent your dog from experiencing the stimuli except during counterconditioning. This may be difficult for certain phobias such as thunderstorms so that medication or other products might be needed to help calm your pet or reduce exposure to the stimuli. Confinement to an area where sounds or sight of the stimuli can be avoided, using music or white noise to mask external sounds, calming caps or goggles that reduce visual stimuli, ear bands or muffs that reduce audible stimuli or calming shirts or wraps, might aid in reducing the level to one that is tolerable for the dog.
3. Train the dog to relax or settle on command, in the absence of any fear-evoking stimuli (see [Box 7.2](#), client handout #23, for training dogs to settle, and client handout #13 on structured interactive training, C.14, available online). Begin in an environment where the dog is calm, focused, and has minimal distractions. Gradually proceed to progressively more distracting locations and situations. The initial conditioning should be done by family members with whom the pet is calmest, most controlled, and responsive. For some dogs, using a head halter improves the speed and safety of training. Implementing a program of predictable interactions where all affection and social rewards are only given for calm and focused behaviors helps to reduce anxiety both by giving the pet control over its rewards and by ensuring that only calm behaviors get rewarded. Practice the training in a variety of environments using treats or toys as rewards. Consider clicker training to be able to immediately reward and gradually shape more relaxed responses when at a distance from your pet.

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4. For storm and firework phobias, it can be particularly useful to train the pet to settle or go to a location where it feels comfortable and secure, and where the auditory and visual stimuli can be minimized, such as a crate with a blanket or cardboard appliance box as cover. In addition, positive cues can be implemented that further calm and distract the dog. This can be accomplished by pairing a CD, video, white noise, or even a towel or blanket that has the owner's scent with each positive settle training session. Encourage the dog to enter voluntarily by placing its favored chews and food-filled toys in the area.
 5. Each stimulus that leads to fear must be identified and placed along a gradient from mildest to strongest. It will be necessary to reproduce the stimuli so that they can be muted or minimized and presented in a controlled manner. An audio recording or video might be a good starting point for conditioning to the sound of the stimulus. If a pet is afraid of the sound, sight, and movement of the vacuum cleaner, then these may all need to be controlled and introduced separately.
 6. Determine the pet's favored rewards and save these for retraining and counterconditioning. For some pets, food is the strongest reward while others may be more responsive to a favored play toy. The reward should be presented each time the pet settles in response to the stimulus. Always train with a quiet, relaxed, upbeat tone of voice.
 7. If the pet responds fearfully as you proceed slowly through more intense stimuli, stop the exposure, wait till the pet is fully calm and reward. the stimulus can be reintroduced at a slightly lower level, and desensitization and counterconditioning can resume.
 8. Once each stimulus has been presented along a gradient of increasingly stronger stimuli and the pet acts calmly and takes rewards in the presence of each stimulus, the separate elements can then be combined and gradually introduced as a group (e.g., vacuum turned on and moving).

Considerations

If the stimulus evokes a strong anxiety response at the beginning of the training session, then the stimulus is not sufficiently muted. It may be necessary to redesign the stimulus gradient so that a slower, more cautious approach can be taken. A leash and head halter might also be used to improve success. Clicker training might also be implemented to help precisely time rewards.

Aggression release

Name of animal: _____ Case #: _____

I certify that I am the owner of the above-mentioned animal and that I have sought behavioral counseling for my pet for advice on decreasing its aggressiveness.

I understand that aggression by animals can cause injury, including fatal injury, to other animals, to other people, and to me. I understand that treatment for aggressive behavior is not a guarantee that the aggression will be successfully controlled, and that it is impossible to ensure that my pet will not cause harm in the future.

I understand that the only way to ensure *absolutely* that my pet will never cause harm in the future is to euthanize it (end its life). I understand that if I do not euthanize my pet, it will be my responsibility to take appropriate precautions to prevent my pet from causing harm to others. These precautions may include, but are not limited to, informing persons near my pet of its tendency for aggressive behavior, keeping it on a leash, muzzling it, using a head collar, and/or keeping it restrained behind doors, gates, or fencing. I also understand that it is my responsibility to be aware of and comply with all relevant ordinances concerning aggressive animals, as well as any bylaws or acts that specifically apply to my pet. Finally, I understand that, should I choose not to euthanize my pet and it causes harm in the future, I may be held liable for such harm.

I hereby certify that I have read and understood the above and that I am signing this authorization with the full understanding that the treatment given my pet may not eliminate its aggressive behavior.

Signature of owner

Date

Printed name

Original release form courtesy of:
Sharon L. Crowell-Davis DVM PhD
Diplomate, American College of Veterinary Behaviorists
College of Veterinary Medicine
University of Georgia
Athens GA 30602

Canine behavior checklist

Name:

Today's date:

Pet's name:

Age:

Sex: M/F

Neutered: Y/N

Please use the following scoring system:

Scoring: 0 – never; 1 – rarely; 2 – sometimes; 3 – frequent; 4 – all the time

	Score	When began?
1. Fear (no aggression): People / Locations / Situations / Noises People familiar ____ unfamiliar ____ Animals familiar ____ unfamiliar ____ Car rides ____ Veterinary clinic ____ Surfaces ____ Storms ____ Fireworks ____ Vacuum ____ Other: ____ Describe:		
2. Growl / threaten / bite unfamiliar people ____ Describe:		
3. Growl / threaten / bite family members ____ Describe:		
4. Growl / threaten / bite other family pets ____ Describe:		
5. Growl / threaten / bite unfamiliar dogs ____ Describe:		
6. Mouthing / grabbing / play biting ____ Describe:		
7. When left alone: anxious ____ destructive ____ vocal ____ soils ____ salivates ____		
8. Soiling indoors: urine ____ stools ____ Left alone: ____ Family at home ____ Describe:		
9. Destructive: Chews ____ Digs ____ Other:		

10. Steals: garbage ____ food ____ toys ____ Other: ____ Describe: If yes, will he drop/give? Y N Is he possessive/aggressive? Y N		
11. Barking at doors, windows, fences? ____ Other: ____ Describe:		
12. Excitable/won't settle ____ Jumps on people ____ Gets on furniture ____/counters Describe:		
13. Difficult to train ____ Ignores commands ____ Pulls on walks ____ Other: ____ Describe:		
14. Repetitive behaviors – Chews/licks self ____ Chases tail ____ Licks/suck ____ Staring ____ Circling ____ Snaps at air ____ Chases lights ____ Other ____ Describe:		
15. Mounting other dogs ____ Household objects ____ Masturbates ____		
16. Chases people ____ animals ____ cars ____ bikes ____ wildlife ____ Other: ____ Describe:		
17. Ingestive – Eating: Voracious / gulps ____ Picky ____ Excessive drinking ____ Eats stools ____ Eats other nonfood items (pica) ____ Describe:		
18. Attention seek ____ Clingy ____ Describe:		
19. Wakes at night ____		
20. Other / describe:		
If you need assistance with any of the above – indicate #		

Behavior consultation questionnaire

Please return this form at least *48 hours* prior to your appointment. Appt time _____ Date _____
If the forms are not received 48 hours prior to the appointment time, you may be requested to reschedule.

Dx: _____

Owner: _____ email: _____ Date: _____

Address: _____ Zip _____

Home phone: _____ Business phone: _____

Family veterinarian: _____ Family veterinarian's phone: _____

Would you like a postconsultation summary letter sent to your veterinarian? Yes ☐ No ☐ No preference ☐

Referred by / How did you hear about us? _____

Please fill out this form carefully and completely. The information which you provide will be very important for diagnosing and treating your pet's behavior problems.

General information

Pet's name: _____ Dog ☐ Cat ☐ Other: _____

Age: _____ years Sex: M/F Breed: _____ Color: _____

Weight: _____

Neutered/spayed: yes ☐ no ☐ At what age? _____ At what age did you obtain the pet? _____

Where did you obtain this pet? friend, breeder, pet shop, humane society, other _____

For what purpose was this pet obtained? companionship, protection, breeding, show, other _____

Time spent indoors: _____ % outdoors: _____ % Is this pet left alone during the day? ☐ yes ☐ no

How long? _____

In what area of the house or yard is the pet kept when ...

a. Family at home:

b. Family away:

c. Family asleep:

d. Guests are visiting:

Access to yard through dog/cat door? ☐ yes ☐ no

Describe the pet's personality: _____

Describe the pet's behavior:

a. just prior to your departure

b. just after your return

Diet: _____ % dry (brand _____) _____ % canned (brand: _____)

_____ % table scraps Supplements: _____

When is the pet fed? _____ By whom? _____

Date of last physical exam: _____ List all major surgical or medical problems and approximate dates:

List all medications (dosage size in mg, schedule, and duration) that have been prescribed for a behavior problem and the results: _____

List all medications (including dosage and schedule) currently being taken by this pet: _____

List the number of other pets in the home:

Cats:	female intact	_____	Dogs:	female intact	_____	Other:
	female spayed	_____		female spayed	_____	
	male intact	_____		male intact	_____	
	male neuter	_____		male neuter	_____	

What toys/types of play does the pet enjoy?

What amount of exercise or opportunity to exercise is given to the pet?

Does he or she run free in the neighborhood? _____ How often? _____

Has this pet had any formal obedience training? y ☐ n ☐ Class ☐ Private instructor ☐ I trained my pet at home ☐

What type of collar do you use for training? flat choke chain pinch/prong head halter

Grade the success: failed ☐ fair ☐ good ☐ excellent ☐ Please describe the type of training:

What will the pet do on command?

Does this pet get along with other animals? y ☐ n ☐ If not, please explain:

How does this pet react to unfamiliar people?

What persons are in the pet's environment? Their schedules? Children's ages?

Behavior problem information

Please describe your pet's behavior problem(s):

What month/year were the problem(s) first noted?

Where and under what circumstances was each problem first noted?

Describe the situations(s) in which the problem is most likely to occur?

The problems occur:	always	usually	rarely	never
when the pet is left alone	☐	☐	☐	☐
in the presence of the family members	☐	☐	☐	☐
during the night when the family sleeps	☐	☐	☐	☐

Frequency of occurrence: ____ times per day ____ times per week ____ times per month ____ times per year

Has there been a change in the frequency or appearance of the problem? ____ Please describe:

What has been done so far to correct this problem?(e.g., discipline, confine, obedience training)

What was the pet's response to the correction?

Were there any significant changes in this pet's environment prior to the appearance of this problem?

- | | |
|---|--|
| ☐ a. moved or redecorated | ☐ e. change in family schedule |
| ☐ b. boarded | ☐ f. new family member / roommate / pet |
| ☐ c. visitors (human or pet) | ☐ g. other |
| ☐ d. diet change | |

How did these changes affect your pet?

Please indicate any other behavior problems:

- | | | | |
|---|-------------------------------------|---|--|
| ☐ housoils | ☐ shy | ☐ play | ☐ pulls hard on leash |
| ☐ destructive chewing | ☐ eats stool | ☐ jumps on people | ☐ other |
| ☐ feeding | ☐ pacing | ☐ unruly | |
| ☐ sexual | ☐ aggressive | ☐ bites | |
| ☐ grooming | ☐ barking | ☐ fights | |
| ☐ digging | ☐ learning | ☐ runs away | |
| ☐ swallows nonfood items | ☐ sleep | ☐ destructive scratching | |

Please describe all situations which are likely to elicit aggressive behavior, such as growling, nipping, biting, attacking, (e.g., petting, approached by adults, approached by children, only when in the car, reaching for, punishing, pushing, taking food or toys away, disturbed while sleeping):

If your pet has an aggression problem, describe at least the last two or three aggressive incidents in detail on the back of this page.

Please discuss in detail any other information which you feel is relevant to your pet's problem:

Housoiling data sheet

Family name: _____ Date: _____

Pet's name: _____

What percentage of the elimination incidents in the home are urine _____% stool _____%

Does this pet urinate when petted? n/y When excited? n/y When scolded / punished? n/y

Is there a preference for urinating inappropriately on

No

Yes

upright surfaces (walls, sides of furniture, drapes)

☐☐

_____ % upright

horizontal surfaces (floor, top of counters or furniture)

☐☐

_____ % horizontal

Is there a preference for secluded areas (e.g., closets, under furniture)?

☐☐

Do strays or pets from other households frequently visit or call
outside windows, doors, or in the yard?

[]

[]

Surface preference for inappropriate elimination:

Rugs _____ clothing _____ paper _____ soil _____ linoleum or other hard surfaces _____

other _____ no preference []

Age when housetrained _____. Never housetrained []

Method of training:

Outcome of training:

Medical history

No

Yes

Has this pet ever had cystitis (urinary bladder infection)?

☐☐

Approximate dates:

Does any straining or pain accompany urination?

☐☐

" " defecation?

☐☐

Have you noticed blood in the urine?

☐☐

Have you noticed blood in the stool?

☐☐

Is there an increased frequency of urination?

☐☐

Is there an increased frequency of urination?

☐☐

Has there been an increase in water consumption?

☐☐

Has there been an increase in the amount of urine voided?

☐☐

Does the stool have an abnormal appearance?

☐☐

Date of last urinalysis _____ Results: _____

Litterbox information (cats)NoYes

Has this pet ever eliminated consistently in the litterbox?

☐☐When indoors, the pet defecates in the box ____ % of the time never defecates in the box ☐When indoors, the pet urinates in the box _____ % of the time never urinates in the box ☐

How many litterboxes are available? _____ How many are covered boxes? _____

How often is the litterbox cleaned? _____

Type of litter used in the litterbox: Standard clay ☐ Clumping ☐ other _____

Brand of litter used: _____ How long has this brand been used? _____

Where is the litterbox(s) kept? _____

Please draw a diagram of your house on the back of this form.

Indicate areas of inappropriate urination, defecation, urine spraying, litterbox positions (cats) and feeding areas.

Cognitive dysfunction screening checklist

Owner's Name: _____		Species: Canine _____ Feline _____	
Pet's name: _____		Breed: _____	
Age: _____	Sex: M/F _____	Neutered: Y/N _____	Today's date: _____
Scoring Key: 0 – none; 1 – mild; 2 – moderate; 3 – severe			Age first noticed
			Score
Confusion – awareness – spatial orientation			
Gets stuck or can't get around objects			
Stares blankly at walls or floor			
Can't find / leaves dropped food			
Goes into wrong side of door; walks into door / walls			
Relationships – social interactions			
Decreased interest in petting / avoids contact			
Decreased greeting behavior			
In need of constant contact, overdependent, "clingy"			
Altered relationship with other household pets – less social			
Altered relationship with other household pets – fear / anxiety			
Aggression to family members _____; to unfamiliar people _____ to family pets _____; unfamiliar pets _____ Other: _____			
Response to stimuli			
Decreased response to auditory stimuli (sounds)			
Increased response, fear, phobia to auditory stimuli			
Decreased response to visual stimuli (sights)			
Increased response, fear, phobia to visual stimuli			
Decreased responsiveness to food / odor			
Activity / anxiety – increased/repetitive			
Pacing / wanders aimlessly			
Snaps at air / licks air			
Licking owners ____, household objects ____			
Vocalization			
Increased appetite (eats quicker or more food)			
Restless / agitation			
Activity – apathy / depressed			
Decreased interest in food / treats			
Decreased exploration / activity			
Decreased interest in social interactions / play			
Decreased self-care			

Sleep–wake cycles; reversed day/night schedule		
Restless sleep/waking at nights		
Increased daytime sleep		
Learning and memory – housesoiling		
Indoor elimination at sites previously trained		
Decrease/loss of signaling		
Goes outdoors, then returns indoors and eliminates		
Elimination in crate or sleeping area		
Incontinence		
Learning and memory – work, tasks, commands		
Impaired working ability/decreased ability to perform learned tasks		
Decreased responsiveness to commands and tricks		
Inability/slow to learn new tasks (retrain)		
Decreased recognition of familiar people / pets		

Informed consent for behavior-modifying drug use

Pet's name: _____ Sex: _____ Age: _____ Weight _____

Owner name: _____ email: _____

Owner address: _____

City: _____ State or province: _____

Telephone: Home: _____ Business or mobile: _____

I, the undersigned, being the owner or duly authorized agent for the owner of the above animal, understand that the drug is not approved for use in dogs and/or cats for the condition being treated. This means that safety, effectiveness, and side-effects have not been comprehensively established for the purpose or species used.

☐ This drug is being dispensed in its original form but is not licensed for the use or species for which it is licensed.

Name of drug: _____

Dose/frequency _____

Special instructions: _____

The drug is labeled for use in (indicate species and use)

or

☐ This drug has been compounded. It has not been approved by regulatory authorities for use in this format and has not undergone rigorous testing for efficacy or stability. However, there is no equivalent veterinary licensed product in a dose or strength that is suited for my pet's needs.

Name of drug: _____

Frequency/dose _____

Special instructions: _____

This drug is licensed for use in its original form for (indicate species and use if any) _____

I understand that the drug is being used in a manner that is off label and I accept the consequences of its use.

Although I understand that the drug is being prescribed in the hopes that it will be beneficial for my pet, I will not hold the veterinarian responsible for any adverse effects, be they physical or behavioral, that might arise from the use of this drug. I have been advised of the potential side-effects, adverse effects, and instructions for monitoring, including:

I have been advised to discontinue the use of the drug and seek veterinary care immediately should any adverse or unexpected effects be exhibited. Since this drug is being used in an attempt to modify or alter behavior, I have also been advised that if there is an undesirable change in my pet's behavior or the problem gets worse, the drug should be discontinued and I should contact my veterinarian. I understand it is possible that this drug may not alter the course of the behavior problem, and that my animal may continue with the behavior problem whether or not the medication is administered. I also understand that since the product is not licensed for this use all potential adverse effects may not be known at this time. I will follow my veterinarian's advice regarding any laboratory or clinical testing required to safeguard against side-effects and to allow adequate ongoing patient monitoring. No other drugs, herbal remedies, or supplements will be used at the same time as this medication except as discussed with my veterinarian.

I hereby give my informed consent to the administration of this drug to my animal. I accept full responsibility, legally and financially, for all actions that may occur from the use of this drug.

I have been advised that a follow-up examination or assessment is next due on: _____

Signed: _____ Print Name: _____

Date: _____

Feline behavior checklist

Name:		Today's date:	
Pet's name:	Age:	Sex: M/F	Neutered: Y/N
Scoring: 0 – never; 1 – rarely; 2 – sometimes; 3 – frequent; 4 – all the time			
	Score	When began?	
1. Fear / avoids (no aggression): People familiar ____ unfamiliar ____ Animals familiar ____ unfamiliar ____ Car rides ____ Veterinary clinic ____ Surfaces ____ Storms ____ Fireworks ____ Vacuum ____ Other: ____ Describe:			
2. Threaten / bite unfamiliar people: ____ Describe:			
3. Threaten / bite family members: ____ Describe:			
4. Threaten / bite family pets: ____ Describe:			
5. Threaten / bite unfamiliar animals: ____ Describe:			
6. Clingy / overly affectionate ____ Avoids / dislikes contact ____ Describe:			
7. Soiling: Urine vertical (e.g., walls) ____ Urine horizontal (e.g., floors) ____ stools ____ Describe:			
8. Destructive: scratching ____ play ____ Climbing / perching ____ Describe:			
9. Destructive: Chew ____ Suck ____ Lick ____ Eats nonfood items (pica) ____ Describe:			

	Score	When began?
10. Steals food ____ garbage ____ Other: ____ Describe:		
11. Ingestive: voracious / gulps / overeats ____ Picky eater ____ excessive drink ____ Eats nonfood items ____ Describe:		
12. Behavior when alone: Anxious ____ Destructive ____ Soils ____ Other: Describe:		
13. Activity: decreased / sleeps more ____ Night waking ____ Overactivity sessions ____ Describe:		
14. Chasing / predation – people ____ other cats ____ Other: ____ Describe:		
15. Compulsive/repetitive staring ____ Rippling skin (hyperesthesia) ____ Overgrooming / hair loss ____ tail chasing ____ Other: Describe:		
16. Excessive vocalization ____ Describe:		
17. Roaming ____ Masturbation ____ Describe:		
18. Climb / perch: counters ____ drapes ____ furniture ____ trees ____ Other: ____ Describe:		
19. Other		
Please indicate if you would like some help changing any of these behaviors (list numbers)		

Evaluation grid of aggressiveness in dogs

		Score			Score
A: Attitude of the owner towards the dog			E: Age of the dog		
Frightened	4		>5 years	5	
Apathetic, carefree	3		1–5 years	3	
Disappointed	2		<1 year	1	
Anger	2		F: Description of the bite		
B: Use of the dog			It releases but remains threatening	5	
Guard and defense	3		It releases and goes away quietly	4	
Herding	2		The dog holds assertively (not shaking and tearing)	3	
Companionship	2		It releases and hides	1	
Breeding, show	2		G: Reaction after reprimand from the owner		
C: Frequency of aggressive manifestations			The dog defends itself	4	
Daily	5		It tries to flee	2	
Weekly	4		It accepts punishment	1	
Monthly	3		H: Degree of access of dog		
Very spread out	2		The whole house	4	
Never*	1		All rooms excepts the parents' bedroom	3	
D: Gender			The whole house except the bedrooms	2	
Castrated male	3		Limited to a few rooms	2	
Spayed female	3				
Male	2				
Female	2				

*In this case, F and G should both receive a value of 1.

Normal values of aggressiveness indices: results of 270 dogs

Age	Gender	lag	las
0–1 year	Males	25–35	10–12
	Females	20–35	8–10
1–5 years	Males	20–25	10
	Females	30–45	10–12
5 years and over	Males	30–45	12–18
	Females	30–40	10–12

The chi-squared test confirms that there are significant differences at the 5% threshold for the value of the indices according to sex and age.

lag, global aggressiveness index; las, social aggressivity index.

Feline housesoiling therapy worksheet

Consultation: Housecall / Office / Phone _____

Owner: _____ Pet: _____ Date: _____

Medical

Medical health issues to address _____

Lab tests _____

Medication, pheromones, etc. _____

General

_____ Reduce anxiety/conflict stress _____ Keep a diary

_____ Avoid punishment (no hit, yell) _____ Interrupt in act _____ Take or follow to litter and reward

_____ Remove odor _____ Identify soiling cat

_____ Environmental enrichment _____ Reward training _____ Play enrich _____ Avoid stressors _____ 3D space

Supervision/confinement

_____ Length of time: _____ weeks Area of house: _____ Cage _____

_____ Bell on the cat to aid supervision _____ Harness on cat to aid supervision

_____ Prevent access to soiled areas or objects _____ Prevent access to stimuli that trigger housesoiling

Safeguard previously soiled areas

Change the function of areas:

_____ Food bowls _____ Bedding _____ Play area, toys _____ Scratching post _____

Alter desirability of areas:

_____ Double-stick tape _____ Citrus product / deodorant _____ Cologne/perfume

_____ Home-made booby traps _____ Motion-activated alarm _____ Motion-activated spray

_____ Cat repellents _____ Moth balls _____

Cover furniture or floors with:

_____ upside-down vinyl carpet runner _____ plastic _____ foil _____

Fill bathtub _____ sink _____ other _____ with water, ping pong balls

_____ Double-sided tape _____ Other: _____

Prevent access to area

_____ Close off frequently soiled rooms _____ Take up rugs _____ Move furniture

Litterbox

_____ Clean frequently _____ Self-cleaning litterbox

_____ Increase number to _____ boxes _____ Change locations _____ More locations

_____ Use empty litterbox or food tray _____ Use litter on only one side of litterbox

_____ Offer different substrate: _____ clumping _____ sand _____ dirt _____ paper _____ sawdust _____ cedar

_____ carpet _____ clay _____ peat moss / leaves _____ wheat _____ litter brand _____ Litter attractants

_____ Offer different boxes: _____ covered _____ uncovered _____ low sides _____ higher sides _____ larger

Miscellaneous

_____ Prevent access to stimuli: _____ Remove strays _____ Block visual sites _____ Booby trap sites

_____ Discourage visiting animals: _____ sprinkler _____ spray device _____ repellent / odor _____ odor removal

_____ When stressful situations are anticipated: _____ confine _____ supervise _____ increase playtime

Assessment

Initiating factors _____

Maintaining factors _____

Diagnosis/prognosis

Behavior consultation follow up

Date: _____ Pet's name: _____ Breed: _____

Cat ☐ Dog ☐ Age _____ Sex _____ Neutered _____ Date of initial consult: _____

Owner's name: _____ Phone: _____

Initial complaint(s): _____

Please use the following rating scale to answer the questions below

0 This question is not applicable	1 I strongly agree with the statement
2 I agree with the statement	3 I neither agree nor disagree with the statement
4 I disagree with the statement	5 I strongly disagree with the statement

- 1 ☐ The session was too long for the nature of the problem
- 2 ☐ The session was too short for the nature of the problem
- 3 ☐ The staff were helpful and knowledgeable in setting up the consultation
- 4 ☐ I was satisfied with the way my pet's care was handled
- 5 ☐ The doctor explained the problem clearly
- 6 ☐ I was satisfied with the explanation of the problem
- 7 ☐ The doctor explained the treatment plan clearly
- 8 ☐ The doctor was well informed with respect to this type of problem
- 9 ☐ The treatment plan for my pet was not too complicated
- 10 ☐ The treatment plan for my pet was complete enough
- 11 ☐ I was able to begin the behavioral program
- 12 ☐ I was able to complete the behavioral program
- 13 ☐ The handouts and resources suggested were useful
- 14 ☐ The product suggestions were useful
- 15 ☐ The drug or supplement suggestions were useful
- 16 ☐ I had sufficient opportunity for follow-up
- 17 ☐ I was satisfied with the outcome of the behavior therapy
- 18 ☐ The consultation fee was appropriate
19. I still have my pet Yes / No ☐ My pet died from unrelated causes
☐ I gave my pet away due to its behavior problem ☐ My pet was put to sleep due to its behavior problem
21. My pet's behavior is
☐ Worse ☐ Same ☐ Mildly improved ☐ Moderately improved ☐ Resolved ☐ Managed but not resolved

Please list treatments used and level of improvement: 1 = none; 2 = mild; 3 = fair; 4 = good; 5 = resolved.	
Behavioral technique, drug, or product used	Indicate level of improvement and comments
Additional comments _____	

Senior pet screening checklist

Owner observations are an important aspect of health care of all pets, but are especially important in the senior pet. Please complete this questionnaire and return it to our receptionist before you see the doctor. It helps us to ensure that nothing is overlooked, and tells us about some of the signs that might not be evident on a physical examination.

Owner's name _____		Species: Canine _____ Feline _____			
Pet's name: _____		Age: _____		Date: _____	
Key: 0 – no problem; M1 – mild; M2 – moderate; M3 – severe	0	M1	M2	M3	When did problem begin?
Weight gain _____ loss _____					
Appetite increase _____ decrease _____					
Vomiting _____					
Diarrhea _____ Colitis (stool with mucus or blood) _____					
Constipation/difficult defecation _____					
Increased drinking _____ Increased urine _____					
Coughing _____ Weakness after exercise _____ Panting _____					
Lumps/tumors _____ Skin problems _____ Describe: _____					
Bad breath/sore gums/difficulty chewing _____					
Muscle tremors/shaking _____					
Weakness/incoordination _____					
Difficulty climbing stairs/increased stiffness _____					
Diminished vision _____					
Diminished hearing _____					
Housoiling					
Urine horizontal surface _____ Urine vertical surface _____					
Bowel movement _____ Urinary incontinence _____					
Indoor elimination in view of family _____					
Goes outdoors, eliminates indoors on return _____					
Elimination in crate or sleeping area _____					
Impaired learning/memory					
Decreased ability to work _____					
Forgets name/commands/previously learned tasks _____					
Decreased recognition of familiar people/animals _____					
Social: Decreased interest in petting/affection _____					
Decreased tolerance of handling _____					
More possessive _____					
Increased need or demand for affection/attention _____					
Problems with social relationships with other pets _____					
Disorientation					
Gets lost _____ Confused _____ Goes to wrong side of door _____					
Can't find dropped food _____ Can't maneuver around obstacles _____					

Key: 0 – no problem; M1 – mild; M2 – moderate; M3 – severe	0	M1	M2	M3	When did problem begin?
Anxiety/aggression Decreased tolerance of being left alone _____ Increased irritability _____ Restless/agitated _____ Anxiety _____ Fearful _____ Phobias _____ Aggression _____ Describe:					
Purposeless/repetitive activity Vocal (whining, barking) _____ Paces _____ Circles _____ Licks _____ Stares into space _____ Self-trauma _____ Sucking _____ Hallucinates _____ Describe:					
Sleep-wake cycles Wakes at night/restless sleep _____ Decreased activity during the day/sleeps more _____					
Apathy/depression Less reactive _____ Listless _____ Decreased interest in food _____ Decreased self-grooming _____					
Other problems/concerns (or use this space to describe any of the above in more detail)					
List medications, diet or supplements your pet is taking:					
Has your pet been previously diagnosed as having any medical problems? Y/N Describe:					

Guidelines for kitten classes

As with young puppies, early socialization, training, and owner education are important in helping prevent behavior problems and decreasing the chances of future relinquishment. Although fewer people run kitten socialization classes, these classes are just as valuable for kittens and their owners and they are a great public relations tool for the practice.

Ideally the first class is run without kittens attending, as it allows owners to focus on the topics being covered. It is primarily intended to explain kitten care, discuss normal cat behavior, and help the owners design an environment that meets all of the kitten's needs while preventing the development of behavior problems. Handouts and a reading list should be distributed so that owners can review the information at home.

Because of the shorter period of socialization of cats this may not be possible unless the first class is run on a Monday, for example, and the second class conducted on Tuesday and a third class later the same week.

Class 1 (no kittens)	Class 2 (with kitten)	Class 3 (with kitten)
Introduction and class rules	Reward train Look/sit on cue Stay on cue	Lie down on cue
Training with rewards	Gentle handling techniques	Walk on harness and lead
Settling techniques	Grooming, nail trim, oral care	Foraging toys and predatory/chase toys
Litter box care	Vaccinations	Teaching tricks
Meeting kittens' needs	Socialize	Neutering
Mental/physical enrich, explore, scratch, climb, perch	Toy exploration	Discuss problems
Confinement/safety		Review
Internal/external parasites		Graduation
Nutrition		
Come on cue		

Age requirements

Kittens should be between 8 and 13 weeks of age, free from external parasites and any evidence of potentially infectious diseases, and have at least one set of vaccinations before entry into the program. It is not recommended having kittens older than 13 weeks commence classes but owners of older cats can be encouraged to attend.

Number of kittens

Kitten Kindy classes should not have more than 6 kittens in each class.

Number of people

The whole family is encouraged to attend. Each child under the age of 5 should be accompanied by an adult.

Number of instructors

It is recommended that there are two instructors per Kitten Kindy class. One instructor can continue with the classes while the other might be assisting a particular kitten and it allows new people to gain experience. Although classes are easier to manage with two, as the kittens do not interact as much, these classes are slightly easier to manage alone than puppy classes.

Space requirements

The space available will help determine the number of kittens that can realistically be accommodated. Every person should be able to sit comfortably on a chair. The room also needs to be kitten-proofed so that kittens cannot escape or get into places that are not easily accessible for people.

References and further reading

Seksel K, Dale S. Kitten Socialization and Training classes. In: Little S, editor. The Cat, Clinical Medicine and Management. Elsevier; 2011.

Seksel K. Training your cat. Victoria, Australia: Hyland House Publishing; 2001.

Seksel K. Preventing Behavior Problems in Puppies and Kittens. Vet Clin N Am 2008;38:971–82.

New puppy or kitten checklist

Owner: _____ Pet's name: _____

Species: _____ Breed: _____ Date of birth: _____

		Visit 1 Date:	Visit 2 Date:	Visit 3 Date:	Visit 4 Date:
		Age	Age	Age	Age
Client education					
1. Behavior	Socialization				
	Safety/pet-proof/prevent undesirable behavior				
	Confinement training				
	House/litter training				
	Reward-based training – learn to earn				
	Handling and exposure to varied stimuli				
	Provide behavioral outlets – chew/scratch/climb				
	Play biting/nipping				
	Environmental enrichment, toys, play, exercise				
	Puppy/kitten classes				
	Neuter				
2. Healthcare	Vaccines				
	Internal parasites – fecal exam/deworm				
	External parasites				
	Grooming – ears/skin				
	Feeding/nutrition – diet				

		Visit 1 Date:	Visit 2 Date:	Visit 3 Date:	Visit 4 Date:
		Age	Age	Age	Age
	Microchip/licensing				
	Dental home care				
3. General advice	After-hours care				
	Clinic services				
	Insurance; payment options				
Handouts/ samples	Puppy/kitten kit – health and behavior care handouts				
	Reading list – web links				
	Clinic brochure/handout				
Products	Pet food/treats				
	Internal/external parasite prevention and control				
	Training products, e.g., head halter				
	Grooming				
	Behavior: chew/play/feeding toys				
	Microchip				
	Books/DVD				
Send/ follow-up	Welcome letter/package				
	Magnet/business card				

Pet selection consultation questionnaire and resource list

Pets are for life. Finding the best match for your home and family is not a science but there is a lot you can do to improve the chances of finding that perfect pet. While a large part of your pet's behavior will be shaped by your care and training (nurture), there is also a lot that might be genetically programmed or ingrained before you ever get your pet (nature).

The goal of a selection consultation is to help you choose a pet that is suited to your family, and to provide guidance to prepare you for your pet's arrival. If you are interested in a purebred, we ask that you first narrow your selection to a few breeds that appeal to you, since there are literally over 1000 dog breeds (recognized or unrecognized, depending on which registry you favor). Once you decide on these preferences, we can then discuss the pros and cons of each breed for your home.

To get some idea as to the size, shape, color, coat type, and other physical characteristics of each breed, you might want to begin by visiting a dog or cat show and interviewing some of the breeders. There are also numerous websites, some of which are listed below, that will help guide you through the selection process, even helping to prioritize breed traits. In addition, check with the kennel clubs, breed associations, breeder directories, and veterinary organizations in your country, state, or province.

On the internet, you can research the physical characteristics of the breed, but also the history of how, when, and why the breed was originally developed. This can give you excellent insight into the behavioral traits of the breed. However, some information on the web can be weighted for or against the breed depending on the writer's background and perspective. Therefore consider both the information and the source when evaluating the information and work with your veterinarian or a behaviorist to weigh the evidence when it seems conflicting. It is also important to consider health and behavior issues that are commonly seen in the breed when selecting the breed and lineage. See the references below and ask your veterinarian for information.

If you would rather adopt a dog or cat that is in need of a home, consider local humane societies, shelters, or rescue groups. Many of these organizations have excellent web resources both nationally and locally to help you find and select stray, abandoned, and relinquished pets. These organizations usually have a relatively large number of purebred dogs and cats available for adoption (e.g. www.petfinder.com, www.americanhumane.org, www.bestfriends.org, www.humanesociety.org).

Various factors should be considered in the adoption decision, including breed, age at adoption, the differences between males and females, as well as where to obtain the pet and what to look for when choosing the pet. Puppy and kitten assessment tests are not a very good way of predicting adult behavior, especially in puppies less than 4 months and kittens less than 3 months, although pets that already display overly fearful behavior at this age should be a cause for concern. As puppies and kittens mature, testing may become increasingly more accurate. Yet, many behavior problems, even those with a genetic component, may not begin to emerge until sexual maturity (6–9 months) or even behavioral maturity (1.5–3 years). Therefore you might learn a lot more by assessing the behavior of the parents if they happen to be accessible.

Finally there are many changes that can occur from the time you bring a new pet home as the pet develops and matures. Environment experience, socialization, and how you interact with and train your pet are critical influences that interact with the genetics of the pet. During the selection consultation you will get both medical and behavioral advice to get you off to a good start, providing for the needs of your pet, teaching your pet what is desirable, and preventing behaviors that might be undesirable.

Date of consult _____

Name: _____ email: _____

Address: _____

City/town: _____ Province/state: _____

Postal/zip code: _____

Phone: Home _____ Business _____

Fax: _____

1. Indicate all family members in the household, including age and sex: _____

2. Indicate any other pets in your household and their age and sex: _____

3. Desired pet: ☐ Dog ☐ Cat

Breeds of interest: list up to 5

4. If you have no specific breeds in mind, list size, traits, and coat color and type that interest you: _____

5. For what reasons are you interested in obtaining a pet (choose one or more)?

Companionship _____ Guarding/protection _____ Show/breeding _____ for the kids

Sport/competition – agility / flyball – if yes, explain _____

Work – hunting, herding – if yes, explain _____

Other – if yes, explain _____

6. Have you ever owned a pet previously? Y/N

If yes, describe the pet(s) and when owned: _____

7. Special needs:

Does any family member have allergies to pets? Y/N If so, what pets and severity? _____

Are there any special considerations about your family that might need to be considered (e.g., physical disabilities, illness, infirmities)?

Are there any restrictions on pet ownership in your home or building? Describe: _____

8. Household (check one or more that apply)

Describe the type of home you live in:

- ☐ Single family detached – indicate approximate size:
- ☐ Town home or semidetached – indicate approximate size:
- ☐ High-rise/apartment – indicate approximate size:
- ☐ Basement flat/room – indicate approximate size:
- ☐ Owned ☐ Rental
- ☐ Fenced private yard – indicate approximate size:
- ☐ Unfenced yard – indicate approximate size:
- ☐ No yard ☐ Shared yard
- ☐ Nearby park(s) ☐ Nearby dog park
- ☐ Busy street ☐ Quiet street ☐ Rural
- ☐ Other

9. Daily schedule/home environment

Indicate your basic family schedule, including how long the pet will be left alone at any one time during the average work or school day. _____

What is the longest time your pet will need to be left alone? _____

Where do you intend to house your pet when you are out of the home? _____

Where do you plan for your pet to sleep at night? _____

Will you be using a pen or crate confinement/training? Y/N If yes, describe: _____

10. Financial (choose one)

- ☐ I have significant concerns about the cost of pet ownership as I will need to watch my expenses
- ☐ I have mild concerns about the expenses of owning a pet
- ☐ I have no concerns about the cost of owning a pet

Below is a list of financial obligations that responsible pet ownership might entail:

a) Regular expenses

Food, treats, toys, license, cleaning supplies, grooming supplies, grooming, day care, dog walker

Healthcare; regular veterinary examination – vaccines, fecal, laboratory screening tests, parasite protection, dentistry, insurance, geriatric care, laboratory tests

b) One-time or infrequent

Purchasing pet, bowls, leash, collar, identification (e.g., microchip, name tag), cage

Healthcare: spay/castrate, puppy/kitten class, adult obedience

c) Occasional recurrent expenses

Boarding, medical care for sickness, illness, emergency

Pet selection references

Examples of useful internet sites:

akc.org, ckc.ca, www.thekennelclub.org.uk, avma.org, ovma.org, cfainc.org, www.cca-afc.com, dogs-in-canada.com, www.ankc.org.au, dogbreeds.net, www.dogadvisorycouncil.com/puppy

Breed catalogs (see dogwise.com, amazon.com)

There are numerous publications in this category. Here are a few suggestions;

Fogle B. Eyewitness companions: cats. New York: Dorling Kindersley; 2006.

Fogle B. Eyewitness companions: dogs. New York: Dorling Kindersley; 2006.

Iams cat breed guide: <http://www.iams.com/cat-breeds/breedguideindex.aspx>.

Iams dog breed guide: <http://www.iams.com/dog-breeds/breedguideindex.aspx>.

Morris D. Dogs: the ultimate dictionary of 1000 breeds. London: Trafalgar Square; 2008.

Other resources

Ackerman L. The contented canine: pet parenting for dog owners. New York: ASJA Press; 2001.

Ackerman L. The genetic connection: a guide to health problems in purebred dogs, 2nd ed. Lakewood, CO: AAHA Press; 2011.

Alterdon D. The cat selector, how to choose the right cat for you. Hauppauge, NY: Barron's; 2011.

Alderton D. The dog selector, how to choose the right dog for you. Hauppauge, NY: Barron's; 2010.

Benjamin CL. The chosen puppy: how to select and raise a great puppy from an animal shelter. New York: Howell Book House; 1990.

Coren S. Why we love the dogs we do: how to find the dog that matches your personality. Richmond, Ontario: Firefly Books; 2000.

Fogel B, White PH. New dog: choosing wisely and insuring happily ever after. Richmond, Ontario: Firefly Books; 2008.

Hart BL, Hart LA. The perfect puppy. New York: WH Freeman; 1988.

Kilcommons B, Wilson S. Paws to consider. Choosing the right dog for you and your family. New York: Warner Books; 1999.

Lowell M. Your purebred kitten – a buyer's guide. New York: Henry Holt; 1995.

Peterson C. Please oh please can we get a dog? Parents' guide to dog ownership. New York: Howell Book House; 2004.

Sternberg S. Successful dog adoption. New York: Howell Book House; 2003.

Some breed selector tools on the internet

Organization	Web site
5-Star Dog	http://www.5stardog.com/dog-breed-selector.aspx
Animal Planet: cats	http://animal.discovery.com/breedselector/catselectorindex.do
Animal Planet: dogs	http://animal.discovery.com/breedselector/dogselectorindex.do
Breeder Retriever	http://www.breederretriever.com/breedselector.php
Dog Breed Info	http://www.dogbreedinfo.com/search.htm
Dog Time Matchup	http://dogtime.com/matchup/start
Eukanuba Dog Breed match	http://www.eukanuba.com/en-US/dog-breed-selector.jsp
Good Housekeeping	http://www.goodhousekeeping.com/family/pets/dog-breed-quiz
Pedigree breed selection	http://www.pedigree.com.au/select/
Pet Care Information and Advisory Service	http://www.petnet.com.au/selectapet/choose-a-pet
Puppyfinder	http://www.puppyfinder.com/breedselector.php
Purina cat breed selector	http://www.purina.com/cat/breed-selector/default.aspx
Purina dog breed selector	http://www.purina.com/dog/breed-selector/default.aspx
Select Smart	http://www.selectsmart.com/DOG/

Guidelines for puppy classes

Puppy Preschool outline

The following guidelines for Puppy Preschool have been developed predominantly from material provided by Dr. Kersti Seksel but other puppy class structures have also been included.

Puppy Preschool classes help your client's puppies develop social skills, be reinforced for acceptable behavior, and learn verbal cues in a safe and controlled environment.

There are many topics that could be covered but realistically they cannot all be taught in 4 or 5 hours of attending Puppy Preschool classes.

It is advisable that just 4–6 (maximum) topics are covered in each class. This will prevent running over time and puppies becoming too tired, and give a greater opportunity for owners to absorb and learn what they are being told.

Ideally the first class is run without puppies being present so that owners can focus on the topics covered rather than be distracted by the puppies. The following four classes can then cover other topics and give practical demonstrations. Each week the class generally involves some training, guidance on canine health issues, and discussion of normal puppy behaviors, and how to prevent these behaviors becoming problems in the home. For more details, see Figure 4.6 or visit www.hillspuppyschool.com.au.

Week 1	Week 2	Week 3	Week 4
Introductions and class rules	Come on cue	Drop on cue	Stay on cue
Training guidelines and use of rewards	Look on cue	Walking on a loose lead	Crate training
Mat training and settling techniques	Vaccinations	Fleas, ticks, heartworms	Oral care
Sit on cue	Handling techniques	Destructive, unruly, barking	Neutering
House (toilet) training	Grooming	Supervised play	Review
Exercise (mental and physical) Meeting puppy's needs	Nutrition	Review sit, look, come on cue	Graduation

The Puppy Preschool program is specifically designed for puppies between the ages of 8 and 16 weeks. It helps develop their social skills, reinforces acceptable behaviors, and teaches them verbal and visual cues. Additionally puppy owners learn about canines, their behavior, and how to manage them. Classes should be run in a safe, secure, and controlled environment for all those involved.

Age requirements

Puppy Preschool is designed for dogs between the ages of 8 and 16 weeks. Although the socialization period of dogs starts at around 3 weeks of age, puppies less than 8 weeks of age should still be with their mother and littermates. It is not recommended having puppies older than 14 weeks commence Puppy Preschool classes as they have reached the end of their primary socialization period. When beginning the program puppies should ideally be between 8 and 12 weeks old. Older puppies should attend juvenile classes which can also be run at the veterinary hospital or by the local trainer. [Authors' note: Exceptions can sometimes be made for slightly older, small-breed dogs with a friendly, nonreactive temperament.]

Although a small breed such as a Jack (Parson) Russell terrier at 18 weeks may be similar in size to a 10-week-old beagle, there can be problems if they are in the same class. It may seem harmless, but the 18-week-old Jack Russell terrier may be more physically and psychologically advanced than the 10-week-old beagle and so will interact quite differently.

Size requirements

Puppies of different breeds should be in the same class. Conducting separate small-breed and large-breed classes sets unrealistic expectations for the puppies as in the real world they will interact with other dogs that may be bigger or smaller than they are. However, when play is incorporated into the session, puppies of similar sizes should be chosen to interact.

Number of puppies

Puppy Preschool classes should ideally have no more than six puppies in each class. Having more puppies in a class can make it more difficult to manage and can lead to a significant increase in vocalization which is distracting and disruptive and can interfere with learning. Adaptil collars or a diffuser in puppy classes can reduce fear and reactivity and may enhance the socialization process.^{1,2}

Number of people

While the whole family should be encouraged to attend, it is not desirable to have children under 5 years of age participate. If they do, each should be accompanied by two adults, one for the child and one for the puppy. For example, a class of 6 puppies with 2 adults and 1 child per puppy makes up a class size of 18 people plus 6 puppies.

Number of instructors

It is recommended that there are two instructors per Puppy Preschool class for several reasons. One instructor can continue with the classes while the other might be assisting a particular puppy. It is also an ideal way for new people to gain Puppy Preschool instructing experience and it is easier to manage the class attendees.

Space requirements

The space available will help determine the number of puppies you can realistically have attend. Every person should be able to sit comfortably on a chair and the puppies should all have a mat to lie on.

¹Graham D, Bailey G, Mills DS. The effect of temporary exposure to synthetic dog appeasing pheromone (DAP) on levels of arousal in puppy classes. J Vet Behav 2007;2:90.

²Denenberg S, Landsberg GM. Effect of dog-appeasing pheromones on anxiety and fear in puppies during training its effects on long term socialization. J Am Vet Med Assoc 2008;233:1874–82.

Behavior observation and evaluation form

1st Visit ☐Re✓☐Home ☐Hospital ☐

Weight

Time

hours

Date:

Pet:

Owner:

Attending:

Observations

Submissive 0————10 Assertive 0————10 Shy 0————10 Bold 0————10

Fearful 0————10 Confident 0————10 Avoids 0————10 Play 0————10

Withdrawn 0————10 Investigates 0————10 Vigilance 0————10 Seeks 0————10

Anxious 0—10 Relaxed 0—10 Dog 0—10 Dog 0—10

Calm 0————10 Excitable 0————10 Human 0————10 Human 0————10

Comments

Response to interviewer

Approach / greeting

Command response	Come	Sit	Stay	Come/Sit/Stay
1	0.00	0.00	0.00	0.00
2	0.00	0.00	0.00	0.00
3	0.00	0.00	0.00	0.00
4	0.00	0.00	0.00	0.00
5	0.00	0.00	0.00	0.00
6	0.00	0.00	0.00	0.00
7	0.00	0.00	0.00	0.00
8	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00
10	0.00	0.00	0.00	0.00
11	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00
13	0.00	0.00	0.00	0.00
14	0.00	0.00	0.00	0.00
15	0.00	0.00	0.00	0.00
16	0.00	0.00	0.00	0.00
17	0.00	0.00	0.00	0.00
18	0.00	0.00	0.00	0.00
19	0.00	0.00	0.00	0.00
20	0.00	0.00	0.00	0.00
21	0.00	0.00	0.00	0.00
22	0.00	0.00	0.00	0.00
23	0.00	0.00	0.00	0.00
24	0.00	0.00	0.00	0.00
25	0.00	0.00	0.00	0.00
26	0.00	0.00	0.00	0.00
27	0.00	0.00	0.00	0.00
28	0.00	0.00	0.00	0.00
29	0.00	0.00	0.00	0.00
30	0.00	0.00	0.00	0.00
31	0.00	0.00	0.00	0.00
32	0.00	0.00	0.00	0.00
33	0.00	0.00	0.00	0.00
34	0.00	0.00	0.00	0.00
35	0.00	0.00	0.00	0.00
36	0.00	0.00	0.00	0.00
37	0.00	0.00	0.00	0.00
38	0.00	0.00	0.00	0.00
39	0.00	0.00	0.00	0.00
40	0.00	0.00	0.00	0.00
41	0.00	0.00	0.00	0.00
42	0.00	0.00	0.00	0.00
43	0.00	0.00	0.00	0.00
44	0.00	0.00	0.00	0.00
45	0.00	0.00	0.00	0.00
46	0.00	0.00	0.00	0.00
47	0.00	0.00	0.00	0.00
48	0.00	0.00	0.00	0.00
49	0.00	0.00	0.00	0.00
50	0.00	0.00	0.00	0.00
51	0.00	0.00	0.00	0.00
52	0.00	0.00	0.00	0.00
53	0.00	0.00	0.00	0.00
54	0.00	0.00	0.00	0.00
55	0.00	0.00	0.00	0.00
56	0.00	0.00	0.00	0.00
57	0.00	0.00	0.00	0.00
58	0.00	0.00	0.00	0.00
59	0.00	0.00	0.00	0.00
60	0.00	0.00	0.00	0.00
61	0.00	0.00	0.00	0.00
62	0.00	0.00	0.00	0.00
63	0.00	0.00	0.00	0.00
64	0.00	0.00	0.00	0.00
65	0.00	0.00	0.00	0.00
66	0.00	0.00	0.00	0.00
67	0.00	0.00	0.00	0.00
68	0.00	0.00	0.00	0.00
69	0.00	0.00	0.00	0.00
70	0.00	0.00	0.00	0.00
71	0.00	0.00	0.00	0.00
72	0.00	0.00	0.00	0.00
73	0.00	0.00	0.00	0.00
74	0.00	0.00		

	Wants it	Likes it	Indifferent	Tolerates	Avoids	Aggressive	Not attempted
Physical contact							

Treats:

Dry liver: Ignore——Excited Liver whiz: Ignore——Excited Other: _____ Ignore——Excited

Response to family

Interaction

Handling

Solicit attention

Command response Come

Sit

Stay

CSS

Response to others

Response to animals

Response to movement

Response to sound

Head halter: v well tolerate ——well tolerate——mild resist——mod resist——much resist——fought/failed

Muzzle: v well tolerate ——well tolerate——mild resist——mod resist——much resist——fought/failed

Shake can: lqn-----N-----XS Comp. air: lqn-----N-----XS lqn-----N-----XS

Slap notebook: lgn-----N-----XS Whistle: lgn-----N-----XS

The Age-Related Cognitive and Affective Disorders (ARCAD) scale

Select one score from each category and calculate totals

Behavior	Item	Score
Eating	Hyperphagia/tachyphagia	5
	Anorexia or hyporexia	3
	Dysorexia	3
	Regurgitation and reingestion	2
	Normal appetite	1
Drinking	Polydipsia	4
	Champing at water without swallowing	3
	Normal	1
Autostimulatory behavior	Repeated movements of licking, nibbling	5
	Stereotyped nibbling, tail-chasing	3
	Attention-seeking licking and nibbling	2
	Normal body care	1
Elimination behavior	Defecates and urinates where he stands (including sleeping area)	5
	Defecates and urinates where he stands (sparing sleeping area)	4
	Defecates and urinates in small scattered amount	3
	No change	1
Sleep	Restless at bedtime	5
	Switches between insomnia and hypersomnia	3
	Sleeps over 15 hours a day	2
	Unchanged	1
Total emotional score =		
Cognitive parameters		
Learned specific behaviors	Virtually no response	5
	Random responses	3
	Unchanged	1
Self-control	Tends to generalize aversive experiences	5
	Difficult to calm down after a stressful event	3
	No apparent changes	2
Learned social behavior	Steals and retains the stolen objects	5
	Bites without warning	2
	Does not submit itself when rebuked	3
	Unchanged	1

Behavior	Item	Score
Adaptive capabilities	Looks indifferent to changes	5
	Unable to stand changes in routine	3
	Retreats from novel situations	2
	Changes induce normal interest	1
Total cognitive score =		
Total ARCAD score = total emotional score + total cognitive score =		
Interpretation of ARCAD scoring		
Interpretation	Score	
Normal aging	9–15	
Re-evaluate in 6 months	16–21	
Dysthymia (depression)	22–30	
Old-dog hyperaggression	18–30*	
Involutive depression	31–44	

*With a score of 3 or 4 for social learning and a score of 3 for self-regulation; in association with a measurement from the aggressiveness index (see [Chapter 21](#) for details).

The EDED scale – evaluation of dog's emotional and cognitive disorders

Behavior type	Specific behavior	Score	Date	Score
Centripetal				
Feeding	Normal appetite			1
	Hyperphagia (with regurgitation and reingestion) ¹			3
	Anorexia/hyporexia			4
	Dysorexia (moving from hyper to hypo)			5
Drinking	Normal drinking			1
	Carries empty water bowl around (ritual) ²			2
	Chews at water without swallowing ³			3
	High-frequency drinking (documented)			5
Self-stimulatory	Normal cleaning behavior			1
	Excessive licking, nibbling ⁴			4
	Stereotyped nibbling, dizziness, turning on itself (or other stereotypies) ⁵			5
Sleep	Normal (or no change)			1
	Increase in sleep, hypersomnia ⁶			2
	Insomnia, during sleep (and hyposomnia) ⁷			3
	Wakes up shortly after falling asleep, anxiety at time of going to sleep (and restlessness) ⁸			5
Centrifugal				
Exploratory (scanning)	Normal			1
	Inhibited			2
	Frequent avoidance responses			3
	Increased, hypervigilant			4
	Oral			5
Aggression (defense)	No aggression or aggression stable (no increase or decrease)			1
	Irritation-related aggression			3
	Fear-related aggression			4
	Displays both fear and irritation aggression			5
Learned social behavior	Unchanged			1
	No submission response			2
	No self-control when playing			2
	Bites without growling			4
	Steals, does not drop stolen objects			5
Specific learned behavior	Same response capacity (allowing for disease or age)			1
	Arbitrary responses			3
	No response to previously learned behaviors			5

Behavior type	Specific behavior	Score	Date	Score
Physical exam ⁹	Normal			1
	Periods of tachycardia and/or tachypnea			2
	Diarrhea, colic			2
	Dyspepsia (and ptyalism)			2
	Increased emotional micturition			3
	Acral lick granuloma (and extensive lick alopecia)			4
	Obesity			4
	High-quantity drinking and urination (PU/PD)			4
Total				

Centripetal, internal factors; centrifugal, external stimuli; PU, polyuria; PD, polydipsia.

¹Hyperphagia with regurgitation and reingestion. The dog eats rapidly, displays spasms, followed by vomiting. It then reingests what it has just expelled and resumes its meal. This behavior appears regularly (1 meal in 2).

²Carries empty water bowl around. The dog moves or carries its bowl toward one or several family members. This behavior stops as soon as the bowl is filled.

³Chews at water without swallowing it (dipsomania). The dog nibbles the water and spreads it around its bowl while swallowing very little.

⁴Excessive licking, nibbling. A dog that is licking or nibbling itself, then spontaneously stops.

⁵Stereotypic nibbling, dizziness. When there is licking or nibbling that does not stop spontaneously (the owners must stop the dog or divert its attention) or else dizziness or any other stereotypy (e.g., licking of the face, jumping, wandering).

⁶Increase in sleep, hypersomnia. When the duration of sleep is longer than the age norm (+25%).

⁷Insomnia, during sleep. Awakenings appear more than 90 minutes after going to sleep.

⁸Wakes up shortly after going to sleep, anxiety at time of going to sleep. The dog awakes in the 30–45 minutes following going to sleep. Prior to going to sleep the dog may display moans, excitement, and a search for contacts, as if it is afraid of going to sleep.

⁹In order to take the physical examination into account, all the manifestations observed must be scored and counted.

Interpretation grid of EDED scores

EDED value	Interpretation
9–12	Normal state
13–16	Phobias
17–35	Anxieties
36–44	Emotional (thymic) disorders

Basic information checklist for history collection

This can be used as a guide for history collection

Family information	• Home, apartment
	• Rural, urban
	• Family size, ages, schedules
	• Physical/mental challenges or limitations
	• Experience with pets
	• Other pets in the home
Pet information	• Signalment
	• Age at adoption
	• Source of pet, when obtained, previous owner information if known, why it was adopted
	• Personality, temperament
	• Medical history (medications administered, any recent or pertinent laboratory tests)
	• Medical/behavioral information about parents, siblings, or littermates
	• Diet, including type of food and frequency, treats fed, who feeds, behavior around food
Training	• Methods used
	• Types of training tools used
	• Confinement training
	• Reward use and the pet's response
	• Punishment use and the pet's response
	• Training methods and results
	• Use of behavior modification devices (and pet's response)
	• Use of control devices (e.g., head halter) and pet's response
Pet's environment, lifestyle, and daily schedule	• Pet's housing, where it stays during the day, night, and when the family is gone
	• Elimination areas, feeding areas, scratching or play areas
	• Access to outdoors through pet door
	• Play and exercise routines
	• Favorite toys
	• When and how long it is left alone
	• Time indoors and outdoors
	• Family members who care for the pet

Reactions to people and animals	• Family members
	• Unfamiliar people
	• Other pets in the household
	• Unfamiliar animals
	• How does the pet react to other animals and nonfamily members on property and off property?
	• Social postures, vocalizations, interactions, approach behaviors, fear, aggression
Response to handling	• Bathing, nail trimming, grooming, petting
Primary problem	• 5 Ws:
	1. What happens?
	2. Where does it happen?
	3. When does it happen?
	4. Who is present (people, animals)?
	5. Why does the family think the behavior occurs?
	• Initial circumstances. Can the owner identify any events that might have caused the problem?
	• Environmental changes preceding appearance of problems
	• Duration
	• Frequency
	• Stimuli that trigger the behavior
	• Change in appearance
	• Treatment attempted and pet's response
Additional problems	• Are there any behavior problems that are separate from the principal problem?

Canine behavior consultation questionnaire

General Information

Today's date: _____ Date and time of consultation (if scheduled): _____
 Name: _____
 Address: _____ City/Town: _____ Postal (Zip) Code: _____
 Phone: Home: (_____) Business: (_____) ext: _____ Mobile/other (_____)
 FAX: (_____) Email: _____
 Veterinary Clinic: _____ Veterinarian's Name: _____
 Clinic phone: (_____) Who referred you to our service? _____

Pet Information

Pet's Name: _____ Date of birth: _____ OR Estimate age if unknown: _____ Years _____ Months _____
 Weight: _____ kg _____ lb Sex: ☐ Male ☐ Female Neuter: ☐ Yes ☐ No at what age? _____
 Any change after neutering? ☐ Yes ☐ No If yes, describe: _____
 Breed or Description: _____ Color: _____

Early History

Age obtained: _____ From where did you obtain this pet? _____
 Breeder's Name or Shelter: (if applicable): _____
 Describe previous home / homes (if known) including litter size, how raised, age weaned, other pets, family, household: _____
 Describe how much interaction your dog had with people before it was obtained: _____
 Describe how much interaction your dog had with other dogs before it was obtained: _____
 Behavior of parents or littermates (if known): _____

For what reason did you obtain this pet? (check all that apply): Companion for family ☐; Companion for other pet ☐; Protection; ☐ Work ☐; Agility ☐; Breeding/show ☐; Other: _____
 Describe your dog's personality (check all that apply): Friendly ☐ Calm ☐; Confident ☐; Demanding attention ☐; Noisy/vocal ☐; Quiet ☐; Excitable/Overactive ☐; Bold ☐; Unruly ☐; Confused: ☐; Stubborn ☐; Timid ☐ Fearful ☐; Aggressive ☐; Depressed ☐; Other _____

The Home Environment

List each family member living in the home (include age of children):

Name	Age	Occupation

Describe how your pet gets along with each family member including any problems: _____

List each pet in home	Species	Breed	Sex	Age

Describe how your pets get along with each other including any problems:

Activities

Describe the usual daily schedule for you and your dog:

Describe the type of exercise / play sessions you offer including how often, how long and with whom?

What is your dog's favorite game:

What toys and chews do you give and how often?

What is your dog's favorite?

Do you give your dog food filled toys? ☐ Yes ☐ No If yes, which ones and how often?

Describe chewing and exploration: ☐ Little or no interest ☐ Mostly directed to own toys and chews

☐ Mild household damage ☐ Moderate damage ☐ Severe damage - If damage, describe when, how often, targets:

Diet and nutrition

Type of food and when do you feed:

What is your dog's favorite food?

Describe your pet's appetite: ☐ Voracious ☐ Good ☐ Average ☐ Picky ☐ Poor ☐ Variable

Type of treats and when do you give?

Describe your pet's interest / appetite for treats: ☐ Voracious ☐ Good ☐ Average ☐ Picky ☐ Poor ☐ Variable

List any food supplements or additives:

Resting, sleep, comfort areas

Where is your dog's preferred sleeping spot / daytime?

Where does the dog sleep at night?

Have you used a crate or pen to confine? ☐ Yes ☐ No Do you still use a crate or pen? ☐ Yes ☐ No

Dog's reaction to being crated or confined:

If you no longer use confinement, when and why did you stop?

Describe the crate and its location:

Reinforcer assessment

If you could give any type of treats what would be your dog's favorite reward? List top 5:

Other than food, what other rewards (e.g. toy, affection) would be most enticing to your dog? List top 5:

Principal Complaint

The following questions are required to assess your pet's problem. It is not necessary to duplicate answers from previous sections or in future sections. Please consider bringing movie clips or pictures of the problem behaviors.

List all Problems that need to be addressed Begin with your primary complaint	Age problem began	Very Serious	Fairly Serious	Not Serious

Have you considered removing your pet from the home if the problem cannot be improved? ☐Yes ☐No
Comment:

What are your goals for this consultation?

For the primary problem(s) what age was your dog when the problem started?

Describe any changes in the home or the pet's health when the problem first started:

What do you think caused the problem?

Describe the problem, beginning with the most recent incident?

Describe the first incident and other pertinent incidents:

How often does the problem occur?

Has there been a recent change in frequency or severity? ☐Yes ☐No If yes, describe:

List each behavioral treatment you have tried, and the dog's response:

Date/when	Treatment	Dog's Response / Outcome

Which approach has been most successful (if any):

List any techniques that have made the problem worse:

List any medications, supplements or remedies tried so far, and the dog's response (effects, side effects):

Date	Medication (when started, dose, frequency and duration)	Outcome (effects, side effects, is pet still receiving)

Training

Has this pet had obedience training, professional training or behavioral assistance? YES ☐ NO ☐
IF YES, PLEASE CONTINUE. IF NO, SKIP TO NEXT SECTION, FAMILY TRAINING

Professional training

Has your dog had obedience training, professional training or professional behavioral assistance? Yes ☐ No ☐
 If yes, describe;

In which of the following did you participate? Puppy class ☐; Juvenile / Adult Class ☐; Private instructor ☐;
 Trained dog myself ☐; None ☐ Other ☐ If other, describe:

At what age was your dog first enrolled? If any additional classes, at what age?
 Describe the classes including the school(s) or instructor(s) and type of training:

How would you describe the training? Reward based (praise) ☐; Reward based (food) ☐; Clicker training ☐; Lure training ☐; Assertive / dominance ☐; Aversive/corrections ☐; Other ☐ If other describe:

Describe any specialized training (obedience, conformation, agility, flyball, retrieving, coursing, protection etc.):

Have you used a trainer, veterinarian or behavior specialist for the problem for which you are seeking help today?
Yes ☐ No ☐ If yes, please advise with whom you consulted, the recommendations and their efficacy:

Family training

If you trained your dog yourself or in addition to training with professional assistance, please describe:

How would you describe the training? Check all that apply: Reward based (praise) ☐; Reward based (food) ☐; Clicker ☐; Lure training ☐; Assertive / dominance ☐; Aversive/corrections ☐; Other ☐ If other describe:

Are you familiar with clicker training? ☐Yes ☐No Have you ever used / tried clicker training? ☐Yes ☐No
If yes, describe results / success:

What books / DVD / TV shows have you seen and implemented:

What type of training has been most successful?

Did any training technique make problems worse?
Describe your dog's learning ability:

List family member(s) with most control:
List family member(s) with least control:
Describe any tricks your dog knows

Do you continue to train? ☐Yes ☐No If yes who trains, type of training and how often:

What type of collar does your dog wear for walks? _____ for veterinary visits

Indicate which of the following training products you have used and the dog's response / efficacy

Product	Type / Brand	Response / Efficacy / Problems
Head halter ☐		
Flat collar ☐		
Choke collar ☐		
Prong or pinch collar ☐		
Remote trainer shock ☐ other ☐		
Harness: front control ☐ back ☐		
Manner's Minder ☐ Clicker ☐		
Target train ☐		
Other ☐		

Please indicate how your dog responds to the following commands

Excellent = in all environments Good = except for major distractions Fair = does not listen if distractions n/a = not applicable

	Excellent	Good	Fair	Poor	Never	N/A	Comments
Sit (immediate)	☐	☐	☐	☐	☐	☐	
Sit-focus (watch) 1 minute	☐	☐	☐	☐	☐	☐	
Sit-focus (watch) 5 minute	☐	☐	☐	☐	☐	☐	
Down (immediate)	☐	☐	☐	☐	☐	☐	
Down/settle 1 minute	☐	☐	☐	☐	☐	☐	
Down/settle 5 minute	☐	☐	☐	☐	☐	☐	
Come (indoors) – leave it	☐	☐	☐	☐	☐	☐	
Come (in yard) – leave it	☐	☐	☐	☐	☐	☐	
Come (in park, public)	☐	☐	☐	☐	☐	☐	
Walk on loose leash	☐	☐	☐	☐	☐	☐	
Turn (let's go) / Back up	☐	☐	☐	☐	☐	☐	
Give / drop toy	☐	☐	☐	☐	☐	☐	
Give / drop stolen item	☐	☐	☐	☐	☐	☐	
Go to: bed ☐ , room ☐ crate/kennel ☐ mat ☐	☐	☐	☐	☐	☐	☐	
Watch/ "look at me"	☐	☐	☐	☐	☐	☐	

Punishment / Discipline / Corrections (mark all answers that apply)

*****Please bring all training devices, collars, halters and harnesses to your appointment*****

	Never	Tried	Use often	Improves	Worsens	Comments/describe
Verbal (e.g. no, stop)	☐	☐	☐	☐	☐	
Physical (hit, rub nose)	☐	☐	☐	☐	☐	
Muzzle grasp	☐	☐	☐	☐	☐	
Lift / pin / roll over	☐	☐	☐	☐	☐	
Shake can / chain	☐	☐	☐	☐	☐	
Noise / ultrasonic alarm	☐	☐	☐	☐	☐	
Water / Air / Citronella	☐	☐	☐	☐	☐	
Booby traps / repellents	☐	☐	☐	☐	☐	
Time-out	☐	☐	☐	☐	☐	
Remote electronic collar	☐	☐	☐	☐	☐	
Remote citronella collar	☐	☐	☐	☐	☐	
Anti-bark collar	☐	☐	☐	☐	☐	
Containment collar	☐	☐	☐	☐	☐	

Has any punishment made the problem worse or led to threats / aggression? Yes ☐ No ☐ If yes, describe:

Has any punishment been effective? Yes ☐ No ☐ If yes, describe:

Does your dog respond differently to different family members? Yes ☐ No ☐ If yes, describe:

Handling - If you have used any of the following handling, how does your dog respond?

	Not tried	Enjoys	Accepts willingly	Accepts reluctantly	Resists	Threats / aggressive	Comments
Nail trimming	☐	☐	☐	☐	☐	☐	
Ear / eye clean	☐	☐	☐	☐	☐	☐	
Brushing	☐	☐	☐	☐	☐	☐	
Bathing	☐	☐	☐	☐	☐	☐	
Brush Teeth	☐	☐	☐	☐	☐	☐	
Rub belly	☐	☐	☐	☐	☐	☐	
Pat head	☐	☐	☐	☐	☐	☐	
Hug / kiss	☐	☐	☐	☐	☐	☐	
Lifting	☐	☐	☐	☐	☐	☐	
Grab collar	☐	☐	☐	☐	☐	☐	
Give medication	☐	☐	☐	☐	☐	☐	
Removing food, treat or toy	☐	☐	☐	☐	☐	☐	

Reactivity – Indicate how your dog reacts to each of the following:

	Calm	Friendly	Excited	Ambivalent	Confused	Fearful	Aggressive
Familiar dogs	☐	☐	☐	☐	☐	☐	☐
Unfamiliar dogs	☐	☐	☐	☐	☐	☐	☐
Squirrels, prey	☐	☐	☐	☐	☐	☐	☐
Cats	☐	☐	☐	☐	☐	☐	☐
Children	☐	☐	☐	☐	☐	☐	☐
Familiar people	☐	☐	☐	☐	☐	☐	☐
Visitors at door	☐	☐	☐	☐	☐	☐	☐
Strangers off property	☐	☐	☐	☐	☐	☐	☐
Strangers in home	☐	☐	☐	☐	☐	☐	☐
Cars / trucks / planes	☐	☐	☐	☐	☐	☐	☐
Bikes / skateboards	☐	☐	☐	☐	☐	☐	☐

Describe any of the above problems in more detail:

Fear of noises or storms? Yes ☐ No ☐ If yes, describe noises and dog's reaction:

Car ride anxiety Yes ☐ No ☐ If yes, describe:

Fear of locations / situations? Yes ☐ No ☐ If yes, describe:

Other anxiety / timidity / fear (non-aggressive): e.g. ears back, cowers, tail tucked, shakes, retreats, hides, lip lick etc.

If yes, describe if not previously discussed:

How long after exposure to these events is finished, does your dog settle down (i.e. back to normal)?

Housetraining Screen

Where is your dog's primary location for elimination?

On average, how many times a day does your dog urinate?

On average, how many times a day does your dog defecate?

Is your dog completely housetrained? ☐Yes ☐No

Does your dog have a housesoiling problem? YES ☐ NO ☐

IF YES PLEASE CONTINUE. IF NO SKIP THE NEXT SECTION, DEPARTURE SCREENING

Does your dog soil in the home with urine ☐; stools ☐; both ☐

Does your dog eliminate outdoors? ☐Yes ☐No If Yes, what is your dog's favored location?

What is your preferred location for your dog to eliminate?

Do you accompany your dog outside for elimination? ☐Yes ☐No

Does your dog eliminate in desired locations while you are watching? ☐Yes ☐No If yes, what do you do when you see your dog eliminate in the correct location?

Does your dog signal when it needs to eliminate? ☐Yes ☐No If yes, describe:

About how often does your dog housesoil?

When is the dog most likely to housesoil?

Does your dog soil in: ☐ specific locations ☐ varied locations ☐ Describe locations?

Does your dog housesoil when family members are at home? ☐Yes ☐No If yes, describe:

Does your dog housesoil while you are watching? ☐Yes ☐No If yes, what do you do?

What is your dog's response?

What do you do when you find urine or stool that has been passed in the incorrect location?

What is your dog's response?

Does your dog urine mark (lift leg / small amounts) outdoors? ☐Yes ☐No If yes, describe:

Does your dog urine mark indoors? ☐Yes ☐No If yes, describe:

Do you confine your dog to a crate, room or pen? ☐Yes ☐No

If yes, does your dog eliminate in the crate, room or pen? ☐Yes ☐No If yes, describe:

Does your dog leak urine or lose control? ☐Yes ☐No If yes, describe when and where:

Has there been a change in drinking when or since the problem began? ☐Yes ☐No If yes, check all that apply:

☐ More frequent / more interest ☐ Larger amount ☐ Less frequent / less interest ☐ Smaller amount

When the housesoiling began, was there a change in urination? ☐Yes ☐No If yes, check all that apply:

☐ Less often ☐ Lesser amount ☐ More often ☐ Greater amount ☐ Straining / discomfort

Have you noticed any change in the urine e.g. odor, color, blood, etc. ☐Yes ☐No If yes, describe:

When the housesoiling began was there a change in defecation (stools)? ☐Yes ☐No If yes, check all that apply:

☐ Less often ☐ More often ☐ Larger volume (amount) ☐ Less volume (amount) ☐ Straining

Have you noticed any change in the stools e.g. odor, color, blood, mucous, consistency ☐Yes ☐No If yes, describe:

Departure Behavior Screening

When you go out is your dog confined or crated? ☐Yes ☐No If yes, indicate if crated or what areas are restricted:
At what times of day and for how long is your dog typically left alone on the average day?

During the average week, what is the longest time you would need to leave your dog alone?

Are there any problems that arise during longer departures compared to shorter departures? ☐Yes ☐No If yes, describe:

How does your dog react when you prepare to leave?

Has your dog ever been left at a kennel? ☐; veterinary office? ☐; with a friend/relative? ☐; Other ☐
If yes, describe your dog's reaction:

Is the dog ever alone outdoors? ☐Yes ☐No How often? How long (average)?

Where is the dog left when outdoors?

How does your dog react to being left alone outdoors?

Does your dog exhibit any behavior problems when you leave your dog alone? YES ☐ NO ☐
IF YES PLEASE CONTINUE. IF NO PLEASE PROCEED TO AGGRESSION SCREEN BELOW
Please make every effort to collect movie clips of dogs behavior when alone and bring to visit.

Describe what your dog does when left alone at home:

How soon after you depart does the problem begin?

How long does the problem last?

How does your dog react at the time of departure (as the last person prepares to leave)?

Does the dog act differently depending on who departs? ☐Yes ☐No If yes, describe how the dog reacts differently with each family member:

What is the dog's reaction at homecomings?

Does your dog react differently at homecoming to different family members? ☐Yes ☐No If yes, describe:

How does your dog react when left alone in the car?

What is the longest that you have left your dog in the car without problems arising?

Are there any places, times or situations in which you leave your dog alone and the problems do not arise or are less intense? ☐Yes ☐No If yes, describe when and where?

What techniques have you used so far to try and improve the problem?

Technique	Dog's response

Aggression Screen - Has your pet ever displayed any of the following?

Threat displays ☐Yes ☐No; **Growling** ☐Yes ☐No; **Bite attempts** ☐Yes ☐No; **Bites** ☐Yes ☐No

IF YOUR PET DOES NOT DISPLAY AGGRESSION PLEASE PROCEED TO MISCELLANEOUS BELOW

What is the potential for injury? ☐none ☐minimal ☐moderate ☐severe

Is aggression the primary reason for today's visit? ☐Yes ☐No

Describe aggression: Threat / no bite ☐ Snap / no contact ☐ Bite – release ☐ Bite / no release or multiple bites ☐

If necessary, could you predict and avoid or prevent all situations in which aggression might arise? ☐Yes ☐No

Is the problem serious enough that you will be unable to keep your pet if it is not improved? ☐Yes ☐No

What is your pet's response to each of the following – check all that apply:

Circumstance	None	Growl / Threat	Snap / no contact	Bite	Multiple Bites	Who is the target?
FAMILIAR PERSON						
Stares at dog	☐	☐	☐	☐	☐	
Reaches for / bends over dog	☐	☐	☐	☐	☐	
Petting dog	☐	☐	☐	☐	☐	
Hugging / kissing	☐	☐	☐	☐	☐	
Lifting dog	☐	☐	☐	☐	☐	
Pins / rolls over	☐	☐	☐	☐	☐	
Putting on / taking off leash / collar	☐	☐	☐	☐	☐	
Gives verbal cue e.g. sit in normal tone	☐	☐	☐	☐	☐	
Using verbal discipline e.g. stop, no	☐	☐	☐	☐	☐	
Grabs collar	☐	☐	☐	☐	☐	
Physical e.g. hit, leash correction	☐	☐	☐	☐	☐	
In response to movement / noise / yells	☐	☐	☐	☐	☐	
Interrupts threat or bite to person / dog	☐	☐	☐	☐	☐	
Approach / hug / touch family member	☐	☐	☐	☐	☐	
UNFAMILIAR PERSON (STRANGER)						
Stranger approaches	☐	☐	☐	☐	☐	
Stranger stares at dog	☐	☐	☐	☐	☐	
Stranger reaches / bends over dog	☐	☐	☐	☐	☐	
Stranger pets dog	☐	☐	☐	☐	☐	
Coming into home / onto property	☐	☐	☐	☐	☐	
Stranger puts on or takes off leash/ collar	☐	☐	☐	☐	☐	
Stranger speaks in normal tone	☐	☐	☐	☐	☐	
Stranger verbal discipline - says no	☐	☐	☐	☐	☐	
Physical - pin, roll, hit, leash correction	☐	☐	☐	☐	☐	
Stranger movement, activity, noise	☐	☐	☐	☐	☐	
Leaving room / yard	☐	☐	☐	☐	☐	
Approach / hug / touch family member	☐	☐	☐	☐	☐	

Circumstance	None	Growl / Threat	Snap / no contact	Bite	Multiple Bites	Who is the target?
HANDLING AND GROOMING						
Familiar person bathes, grooms or towels	☐	☐	☐	☐	☐	
Familiar person treats ears / eyes	☐	☐	☐	☐	☐	
Familiar person trims nails	☐	☐	☐	☐	☐	
Unfamiliar person bathes, or grooms	☐	☐	☐	☐	☐	
Unfamiliar person treats ears / eyes	☐	☐	☐	☐	☐	
Unfamiliar person trims nails	☐	☐	☐	☐	☐	
Behavior during veterinary exam	☐	☐	☐	☐	☐	
Approach dog when with family member	☐	☐	☐	☐	☐	
Approach dog on its mat, bed, rest spot	☐	☐	☐	☐	☐	
Approach when resting on furniture	☐	☐	☐	☐	☐	
OTHER ANIMALS						
Familiar dogs	☐	☐	☐	☐	☐	
Other pets in home	☐	☐	☐	☐	☐	
Familiar dogs / off property	☐	☐	☐	☐	☐	
Unfamiliar dogs	☐	☐	☐	☐	☐	
Animals	☐	☐	☐	☐	☐	
TREATS / TOYS						
Approach eating food, treats, chew toys	☐	☐	☐	☐	☐	
Approaches when playing with toys	☐	☐	☐	☐	☐	

BITE HISTORY

Date	Situation (what happened) Start with most recent	Who is bitten - name, person, animal	Relationship (familiar, stranger)	Did bite break skin? Y ☐ N ☐

How many times has your dog bitten?

List your dog's primary targets (people / animals) for aggression:

Has any bite caused sufficient injury to require medical attention? ☐Yes ☐No If yes, describe:

How would you describe the problem? Getting worse ☐; Staying about the same ☐; Getting Better ☐;

When your dog threatens or attempts to bite, how do you handle the situation and what is your dog's reaction?

After your dog has bitten how do you handle the situation and what is your dog's reaction?

Describe any technique that seems to improve the problem:

Describe any technique that seems to aggravate the problem:

How would you describe your dog's attitude when aggressive? bold ☐; protective ☐; possessive ☐; outgoing ☐; fearful ☐; confused ☐; chase ☐ other ☐ If other, describe:

Describe your dog's expressions and postures when aggressive:

Does your dog seem 'guilty' or 'sorry' after aggression ☐Yes ☐No If yes, describe:

Are there children or people with mental or physical challenges at risk for aggression? ☐Yes ☐No If yes, describe:

Miscellaneous:

Please check if your pet exhibits any of the following behavior. If undesirable, please comment

	None	Occurs but no concern	Occurs, would like to improve	Reason for visit today	Comments/describe
Vocalize bark / whine / howl	☐	☐	☐	☐	
Jumps up – owner / stranger	☐	☐	☐	☐	
Pulls on leash	☐	☐	☐	☐	
Won't come when called	☐	☐	☐	☐	
Nips / grabs with mouth	☐	☐	☐	☐	
Only listens when feels like it	☐	☐	☐	☐	
Pushy / demanding	☐	☐	☐	☐	
In rooms / on furniture not allowed	☐	☐	☐	☐	
Follows / clingy	☐	☐	☐	☐	
Stool Eating	☐	☐	☐	☐	
Chases	☐	☐	☐	☐	
Hunting / predation	☐	☐	☐	☐	
Garbage Raiding	☐	☐	☐	☐	

	None	Occurs but no concern	Occurs, would like to improve	Reason for visit today	Comments/describe
Food stealing	☐	☐	☐	☐	
Destructive chewing	☐	☐	☐	☐	
Night waking	☐	☐	☐	☐	
Digging	☐	☐	☐	☐	
Eats non-food items	☐	☐	☐	☐	
Tail chasing / spinning	☐	☐	☐	☐	
Licks Objects	☐	☐	☐	☐	
Excessive grooming	☐	☐	☐	☐	
Staring	☐	☐	☐	☐	
Star gazing	☐	☐	☐	☐	
Fly chasing	☐	☐	☐	☐	
Light chasing	☐	☐	☐	☐	
Masturbation	☐	☐	☐	☐	
Mounting	☐	☐	☐	☐	
Roaming / running away	☐	☐	☐	☐	

Please provide further details if your pet is exhibiting any of the above (if not fully discussed):

Medical Screen

When was your dog's last veterinary visit?

Reason for visit:

Are vaccines up to date? ☐Yes ☐No If no, describe:

Does your pet have any ongoing medical problems? ☐Yes ☐No If yes, describe:

Is your pet presently on any medication? ☐Yes ☐No If yes, describe (include name, dosage, duration):

Has your dog had any laboratory tests (e.g. blood, urine, X-rays)? ☐Yes ☐No Date:

Tests:

If yes, indicate any abnormal findings:

Please have your veterinarian complete the medical section and submit any recent laboratory tests

Any change in appetite: ☐Yes ☐No Comments:

Any change in weight: ☐Yes ☐No Comments:

Does your pet drink excessively? ☐Yes ☐No If Yes, describe (how often, how much):

Does your pet have arthritis or any other painful condition? ☐Yes ☐No If yes, describe condition and treatment:

Have you noticed any deficits in your pet's senses? ☐Yes ☐No If yes, describe:

Have you noticed any change in stool frequency (how often) or in the way it looks ☐Yes ☐No If yes, describe:

Have you noticed any change in the frequency of urination or any discomfort? ☐Yes ☐No If yes, describe:

Have you noticed any other health issues: ☐Yes ☐No If yes, describe:

Veterinary History Form

For Referral Cases: to be completed by referring DVM

Today's date:

Date of pending behavior consultation:

Client:

Pet Name:

Clinic:

Referring Doctor:

Clinic Phone #: ()

Clinic FAX #: ()

Clinic email:

Clinic Address:

City / town:

Postal Code:

Behavioral history

Describe the behavioral presenting complaint:

Please indicate any advice or counselling that you have given the client thus far:

Describe any medication or product recommendations and outcome.

Describe the pet's behavior in your clinic, including any problems that you have observed:

Has this pet's behavior in your clinic changed?

Medical history:

Date of most recent examination:

Describe findings:

Are physical examination and vaccines up to date? ☐ Yes ☐ No If no, describe:

Current medications:

Describe any present medical problems and any treatment being received:

Describe any resolved medical problems, reoccurring medical problems or previous surgeries:

Is there any indication of pain ☐, sensory decline ☐, or cognitive dysfunction ☐

If yes, describe:

Does the pet have any dietary restrictions?

Diagnostic Screening Tests: Attach a copy of all recent laboratory tests OR list any recent tests and dates:

Feline behavior consultation questionnaire

General Information

Today's date: _____ Date and time of consultation (if scheduled): _____

Name: _____

Address: _____ City/Town: _____ Postal (Zip) Code: _____

Phone: Home: _____ Business: _____ ext: _____ Mobile/other: _____

FAX: _____ Email: _____

Veterinary Clinic: _____ Veterinarian's Name: _____

Clinic phone: _____ Who referred you to our service? _____

Pet Information

Pet's Name: _____ Date of birth: _____ or Estimate age: _____ Years or _____ Months

Weight: _____ kg _____ lb Sex: ☐ Male ☐ Female Neutered: ☐ Yes ☐ No At what age? _____

Any change after neutering? ☐ Yes ☐ No If yes, describe: _____

Breed: _____ Color: _____

Declawed: ☐ Yes ☐ No If yes, at what age? _____ Describe any changes noted after declaw? _____

Your pet's early history

Age obtained: _____ From where did you obtain this pet? _____

Name of Breeder / Shelter: _____

Describe previous home (if known) including litter size, how raised, age weaned, other pets, family: _____

Describe (if known) how much interaction your cat has had with people or other pets before it was obtained _____

Behavior of parents or littermates (if known): _____

For what reason did you obtain this cat? (check all that apply): companion for family ☐; companion for cat ☐; rodent control ☐; breeding/show ☐; other _____

Describe your cat's personality (check all that apply): friendly ☐; bold ☐; over-active ☐; playful ☐; demanding attention ☐; independent ☐; fearful / nervous ☐; aggressive ☐; noisy/vocal ☐; excitable ☐; depressed ☐; other _____

The Home Environment

List each family member living in the home (include age of children):

Name	Age	Occupation

Describe how your pet gets along with each family member including any problems: _____

List all other pets in the home:

Name	Species	Breed	Sex	Age	Relationship

Describe if any of the pets do not get along with each other:

Your Cat's Activities

Diet and nutrition

Type of food: when do you feed / feeding routine:

What food does your cat prefer?

Describe your pet's appetite: ☐Voracious ☐Good ☐Average ☐Picky ☐Poor ☐Variable

Do you give treats ☐Yes ☐No Type of treats?

What treats does your cat prefer?

Describe your pet's interest / appetite for treats: ☐Voracious ☐Good ☐Average ☐Picky ☐Poor ☐Variable

When and how often do you give treats?

List any food supplements or additives:

Does your cat hunt? ☐Yes ☐No If yes, describe when and how often:

What is your cat's favored prey?

Does your cat eat the prey?

The Home Environment

Describe you and your cat's daily schedule:

Does your cat spend time outdoors? ☐Yes ☐No If yes, ☐confined to the yard ☐on harness ☐free to roam ☐cat door ☐

If outdoors, describe when, where and how often

Does your cat see, hear or come in contact with outdoor cats? ☐Yes ☐No If yes, describe:

Have you used a crate for housing or travel ☐Yes ☐No If yes, describe cat's reaction:

Where is your cat's favorite sleeping spot / resting area / bed during the night?

Where is your cat's favorite sleeping / resting / bed / perching area during the day?

Does your cat have a favored climbing / perching area / play centre? ☐Yes ☐No If yes describe

Does your cat climb / perch / play in areas that are undesirable to you? ☐Yes ☐No If yes describe

Does your cat have a scratching area / preferred scratching location? ☐Yes ☐No If yes, describe

Does your cat scratch in areas that are undesirable? ☐Yes ☐No **If yes continue: If no proceed to Cat's Environment:**

List undesirable locations?

When and how often does your cat scratch these locations?

Are there specific events that precede scratching?

Do see your cat scratching?

If yes, what do you do:

Cat's reaction:

What do you do when you find an area that your cat has scratched?

Cat's reaction:

What have tried so far to treat the scratching and what, if anything has been effective?

Cat's Environment - Please bring pictures or video of your home including where problems occur.

Describe home: Detached family home ☐; Town (row) house / semi-detached ☐ Apartment / high rise rental ☐

Condo / high rise owned ☐ Rented room / basement ☐ Trailer home ☐ Other ☐ Describe:

How many stories? How many rooms?

Please draw a diagram of each floor of your home and scan or FAX. (Use additional pages for other floors)

Label each room. Identify windows and doors. Identify any large furniture. Also indicate type of floor for any areas soiled.

Use the codes below to label litter box locations, feeding areas, play stations, resting areas, and problems

L: Litter – please number each location e.g. **L1, L2, L3 etc.**) - **F:** feeding location: - **P** - play area / play center:

SP: for Scratching post – **SD:** Sleep / resting locations (day) – **SN:** Sleeping locations (night) **W:** Window

Problems: **U:** site of urine soiling - **M:** site of urine marking (upright surfaces) – **BM:** site of stool soiling - **S:** site of destructive scratching

Principle Complaint

The following questions are required to assess your pet's problem. It is not necessary to duplicate answers from previous sections or in future sections. Please consider bringing movie clips or pictures of the problem behaviors and the cat's environment.

List all Problems that need to be addressed Begin with your primary complaint	Age problem began	Very Serious	Fairly Serious	Not Serious

Have you considered removing your cat from the home if the problem cannot be improved? ☐Yes ☐No
Comment:

What are your goals for this consultation?

For the primary problem(s) what age was your cat when the problem started?

Describe any changes in the home or the pet's health when the problem first started:

What do you think caused the problem?

Describe the problem, beginning with the most recent incident?

Describe the first incident and any other pertinent incidents:

How often does the problem occur?

Has there been a recent change in frequency or severity? ☐Yes ☐No If yes, describe:

List each behavioral treatment you have tried (other than drugs), and the cat's response:

Date/when	Treatment	Cat's Response / Outcome

Which approach has been most successful (if any):

List any techniques that have made the problem worse:

List any medications, supplements or remedies tried so far, and the cat's response (effects, side effects):

Date	Medication (when started, dose, frequency, duration)	Outcome (effects, side effects, is pet still receiving)

Training

Have you or your cat had any formal training? Yes ☐ No ☐ If yes, did your cat attend kitten classes? ☐ Other training? ☐
In home instruction? ☐ Other ☐ If yes describe:

Have you done any of your own training with your cat? Yes ☐ No ☐ If yes, describe:

What sources (books, DVD, websites) have you used for advice on cat behavior and training if any?

Does your cat respond to any commands / cues? Yes ☐ No ☐ If yes, check all that apply: Sit: ☐ Down: ☐ Come: ☐
Go to e.g. bed / room: ☐ Other trained commands:

Who does your cat respond to the best?

List any tricks your cat can perform:

Describe your cat's learning ability:

If you wanted to get your cats attention or get your cat to come what would work best (e.g. shaking a box of treats, command)?

How successful would this be? Very ☐; Most times ☐; Occasional ☐; Unsuccessful ☐; Other:

List your cat's top 3 food or treat rewards:

List your cat's top 3 non-food rewards (e.g. toy, affection):

Have you used any of the following for training :

	No	Yes	No Effect	Worsens	Effective	Comments / describe success
Positive reinforcement	☐	☐	☐	☐	☐	
Lure / reward training	☐	☐	☐	☐	☐	
Food / treat rewards	☐	☐	☐	☐	☐	
Toy / play reward	☐	☐	☐	☐	☐	
Affection / reward	☐	☐	☐	☐	☐	
Clicker training	☐	☐	☐	☐	☐	
Assertive / confront	☐	☐	☐	☐	☐	
Body harness	☐	☐	☐	☐	☐	
Collar	☐	☐	☐	☐	☐	

Punishment / Discipline / Corrections used

	No	Yes	No Effect	Worsens	Effective	Comments/describe
Verbal reprimand - no	☐	☐	☐	☐	☐	
Physical punish - hit	☐	☐	☐	☐	☐	
Scruff / neck grasp	☐	☐	☐	☐	☐	
Physical lift / pin	☐	☐	☐	☐	☐	
Shake can / noise	☐	☐	☐	☐	☐	
Ultrasonic	☐	☐	☐	☐	☐	
Water spray	☐	☐	☐	☐	☐	
Air or citronella spray	☐	☐	☐	☐	☐	
Booby trap / repellent	☐	☐	☐	☐	☐	
Time-out / confinement	☐	☐	☐	☐	☐	

Have you used any other punishment not listed above? Yes ☐ No ☐ If yes, describe:

What punishment is most effective?

Has punishment made the problem worse or resulted in aggression? Yes ☐ No ☐ If yes, describe which:

Does your cat respond differently to punishment from different family members? Yes ☐ No ☐ If yes, describe:

Play and activities

Interactive / Social play

Do you play with your cat? Yes ☐ No ☐ If yes, what is favored game:

Describe when, how often, with whom:

Object / exploratory play

Does your cat engage in play on its own? Yes ☐ No ☐ If yes, what are favored toys / activities:

Describe when and how often:

Does your cat have an activity center? Yes ☐ No ☐ If yes, what are favored toys / activities:

Please indicate your cat's interest in the following activities

Level of interest	High	Low	None	How often	Describe / Favorite
Chase toys with owner	☐	☐	☐		
Self play – batting toys	☐	☐	☐		
Self play – run / chase	☐	☐	☐		
Food filled toys	☐	☐	☐		
Exploring e.g. bags, box	☐	☐	☐		
Fetch / chase	☐	☐	☐		
Chewing / cat grass	☐	☐	☐		
Laser toys	☐	☐	☐		
Catnip	☐	☐	☐		
Climb / Perch	☐	☐	☐		
Scratch posts	☐	☐	☐		
Going outdoors	☐	☐	☐		

Does your cat engage in over-exuberant or unacceptable play?

Does your cat chew on or swallow objects that are inappropriate / undesirable?

Handling

	Unknown	Enjoys	Resists	Accepts willingly	Accepts reluctantly	Threatens / aggressive	Cannot attempt
Petting / stroking head / neck	☐	☐	☐	☐	☐	☐	☐
Petting / stroking back / tail	☐	☐	☐	☐	☐	☐	☐
Rubbing belly	☐	☐	☐	☐	☐	☐	☐
Brushing	☐	☐	☐	☐	☐	☐	☐
Hugging / kissing	☐	☐	☐	☐	☐	☐	☐
Restrained on your lap	☐	☐	☐	☐	☐	☐	☐
Nail trimming	☐	☐	☐	☐	☐	☐	☐
Ear handling / cleaning	☐	☐	☐	☐	☐	☐	☐
Eye cleaning / medicating	☐	☐	☐	☐	☐	☐	☐
Bathing	☐	☐	☐	☐	☐	☐	☐
Teeth brushing	☐	☐	☐	☐	☐	☐	☐
Lifted / carried	☐	☐	☐	☐	☐	☐	☐
Giving medication	☐	☐	☐	☐	☐	☐	☐

Describe any problems in more detail:

Are there differences in the way the cat responds to different family members.

Fear and Reactivity – Indicate how your cat reacts to each of the following

	Calm	Playful	Ambivalent	Fear	Confused	Friendly	Aggressive
Familiar cats in home	☐	☐	☐	☐	☐	☐	☐
Unfamiliar cats in home	☐	☐	☐	☐	☐	☐	☐
Cats outside home	☐	☐	☐	☐	☐	☐	☐
Unfamiliar visitors to home	☐	☐	☐	☐	☐	☐	☐
Familiar visitors to home	☐	☐	☐	☐	☐	☐	☐
Veterinary visits	☐	☐	☐	☐	☐	☐	☐
Thunderstorms / fireworks	☐	☐	☐	☐	☐	☐	☐
Other noises: _____	☐	☐	☐	☐	☐	☐	☐

Describe any of these problems in greater detail:

Is there anything not listed previously that might cause your cat to become fearful, anxious or aroused: Yes ☐ No ☐ If yes describe

Describe your cat's level of arousal in these situations: Mild ☐; Moderate ☐; High / Excessive ☐

How long after exposure to these events has passed, does it take for your cat to settle down (i.e. back to normal)

Are there any problems when travelling? Yes ☐ No ☐ If yes, describe:

What do you do to try and correct the problem?

Cat's reaction:

Describe how you transport your cat? Carried by family member ☐ On seat ☐ Carrier ☐ Other:

AGGRESSION: Does your cat ever display aggression to people or other animals? Yes ☐ No ☐
If no please proceed to next section – elimination. If yes, please continue:

Is aggression the primary reason for today's visit? Yes ☐ No ☐ Describe severity? Mild ☐; Moderate ☐; Severe ☐

Please indicate to which of the following your cat has shown aggression: Family members ☐; visitors ☐; familiar cats in home ☐; unfamiliar cats in the home ☐; outdoor cats ☐; dogs in home ☐; other animals ☐; veterinary visits ☐; groomer ☐; Other:

Does the aggression occur when owners are: present ☐; absent ☐; both ☐; Comment:

Have you considered removing your pet from the home if the problem cannot be improved? Yes ☐ No ☐ If yes, comment:

In what situations does your cat display aggression?

How often has the problem occurred? Is the problem a) getting better ☐; b) staying the same ☐ c) getting worse ☐

Describe the aggression: Threats no bite ☐ Bites but not break skin ☐ Bite with minor injury ☐ Serious injury ☐ Other:

Describe your cat's demeanour at the time of aggression: Playful ☐; Fearful ☐; Bold / Assertive ☐; Other

Describe the most recent event: What happened immediately prior to the event?

Describe the event

Describe your cat's appearance (body posture, face, ears, tail, hair on back)

What did you do at the time?

What was your cat's reaction?

Has any treatment used to date been effective? Yes ☐ No ☐ If yes, describe:

Has any treatment made the problem worse? Yes ☐ No ☐ If yes, describe:

Elimination & Litter Information:

How often do the following events occur?	Many times a day	Once Daily	Weekly	Every 2 weeks	Monthly	Never	Other	Comments / describe
Cat urinates in litter box	☐	☐	☐	☐	☐	☐	☐	
Cat urinates outside box	☐	☐	☐	☐	☐	☐	☐	
Cat sprays urine / marks	☐	☐	☐	☐	☐	☐	☐	
Cat defecates in litter box	☐	☐	☐	☐	☐	☐	☐	
Cat defecates outside box	☐	☐	☐	☐	☐	☐	☐	
Cat eliminates outdoors	☐	☐	☐	☐	☐	☐	☐	
Litter box is scooped out	☐	☐	☐	☐	☐	☐	☐	
Litter replaced with new litter	☐	☐	☐	☐	☐	☐	☐	
Litter box cleaned and washed	☐	☐	☐	☐	☐	☐	☐	

Litter location – indicate what preferred by each cat	Type of litter	Type of box
1.		
2.		
3.		
4.		
5.		

Does your cat ever use its litter box while you are watching? Yes ☐ No ☐
 Indicate which box(es) your cat prefers:
 Indicate which box(es) your cat seldom or never uses:
 Indicate which litter your cat prefers:
 Indicate which litter your cat seldom uses or avoids:
 Does your cat dig / bury before or after eliminating? Yes ☐ No ☐ If yes, describe:

Indicate any differences between your cats as to their preferred litter or box:

Elimination Problems - Does your cat have a problem with housesoiling or marking)? Yes ☐ No ☐
If NO, proceed to fear and anxiety. If yes, please continue:

Is elimination the primary reason for today's visit? Yes ☐ No ☐ Is the problem: getting worse ☐; staying same ☐; improving ☐
 Is the urine soiling a) stools ☐ b) urine: ☐ c) both ☐ Is the soiling a) only on horizontal surfaces (floors) ☐ b) only on vertical (upright) ☐ c) mostly upright and some horizontal ☐ d) mostly horizontal and some upright ☐ e) both upright and horizontal ☐
Stool: At the time the problem began describe your pet's stool: Normal ☐; Constipation ☐; Less frequent ☐; More frequent ☐; Soft/diarrhea ☐; Blood/mucous ☐ Straining/discomfort ☐; Vocalization ☐ If any change from normal describe:

Are there any ongoing abnormalities? Yes ☐ No ☐ If yes, describe:
Urine: At the time the problem began describe your pet's urine: Normal ☐; Less frequent ☐; More frequent ☐; More volume /amount ☐; Less volume ☐; Straining / discomfort ☐; Vocalization ☐ Blood ☐ If any change from normal describe:

Are there any ongoing abnormalities? Yes ☐ No ☐ If yes describe:
 Has there been any change in appetite? Yes ☐ No ☐ If yes, describe:
 Has there been any change in drinking? Yes ☐ No ☐ If yes, describe:
 Was your pet ever completely "litter trained"? Yes ☐ No ☐ If yes, describe:

Inappropriate Locations soiled	Surface	Urine, stool or both	When / How often?
		Stool ☐ Urine ☐	
		Urine ☐ Stool ☐	
		Urine ☐ Stool ☐	
		Urine ☐ Stool ☐	
		Urine ☐ Stool ☐	

When your cat is indoors a) what percentage of urine is outside of the box?
 b) what percent of stool is outside box
 Is there a particular surface / texture on which your cat prefers to soil? Yes ☐ No ☐ If yes describe

Are there any surface types where your cat never soils? Yes ☐ No ☐ If yes describe

Is there a room or location where your cat prefers to soil? Yes ☐ No ☐ If yes describe

Is there a room or location where your cat never soils? Yes ☐ No ☐ If yes describe

Is there a time of day when the problem is most likely to arise?

Can you think of any pattern when the problem is most likely to arise?

Have seen your cat when it is soiling? Yes ☐ No ☐ If yes describe

If yes what do you do

Cat's reaction?

List types of litter that you have tried?	Indicate cat's response:
	Uses readily ☐ Uses but not a favorite ☐ Avoids ☐
	Uses readily ☐ Uses but not a favorite ☐ Avoids ☐
	Uses readily ☐ Uses but not a favorite ☐ Avoids ☐
	Uses readily ☐ Uses but not a favorite ☐ Avoids ☐

What is your cat's favorite litter?

List types of boxes that you have tried?	Indicate cat's response:
	Uses readily ☐ Uses but not a favorite ☐ Avoids ☐
	Uses readily ☐ Uses but not a favorite ☐ Avoids ☐
	Uses readily ☐ Uses but not a favorite ☐ Avoids ☐
	Uses readily ☐ Uses but not a favorite ☐ Avoids ☐

What is your cat's favorite box?

Have you tried litter with deodorizer? Yes ☐ No ☐ If yes, describe:

Have you tried different depths of litter? Yes ☐ No ☐ If yes, describe:

What age was your pet when this problem started?

Describe the first incident:

Were there any changes in the household or litter when the problem began?

What do you think caused the problem?

What has been done so far (other than drugs) to try and correct the problem and how did the cat respond?

List any techniques that have been successful:

List any techniques that have made the problem worse:

List any drugs or pheromones tried so far and the cat's response to the medication (efficacy, side effects):

Grooming

Does your cat's self grooming appear to be: ☐ Normal ☐ Excessive ☐ Decreased

When is your cat most likely to groom?

Describe situations or events that lead to increased grooming:

Describe situations or events that lead to decreased grooming:

Does your cat lick or groom: Self ☐ Other cats in home ☐ People in Home ☐ Household objects ☐ If yes, describe:

Are any of these behaviors excessive or problematic? Yes ☐ No ☐ If yes, please describe:

Does your cat knead? If yes, please describe when and with whom:

Do you feel your cat's kneading is unusual or excessive? If yes, please describe:

If this is the primary reason for today's visit, please provide more details in the Primary Complaint Section:

Feline skin disorders

Does your cat have problems with overgrooming, rippling skin, excessive scratching or hair loss? Yes ☐ No ☐

If NO please proceed to next section – Primary Complaint. If yes, please continue:

Is a skin disorder the reason for today's visit? Yes ☐ No ☐ Is the problem: getting better ☐; staying the same ☐ improving ☐

Describe the problem:

When did the problem first begin? (cat's age, time of year, etc.)

Do any pets in your home go outdoors? Yes ☐ No ☐ If yes, which ones?

Were there changes in the household, which may have occurred just before the problem began?

Were there changes in the cat's health or behavior when the problem began?

Has the severity, frequency, pattern or type of hair loss changed since the problem first arose? Yes ☐ No ☐ If yes, please describe:

Is there a particular event that is most likely to cause or aggravate the problem?

Is there a particular time of month or time of year that the problem gets worse or begins to improve?

Is the behavior more likely to occur when you are: At home but out of the room ☐; at home in the room ☐; away from home ☐

Do any other pets in the household have any skin problems? Yes ☐ No ☐ If yes, please describe:

Have any other family members or friends developed skin problems? Yes ☐ No ☐ If yes, please describe:

What has been done so far to try and correct the problem?

What was the cat's response?

List any techniques or medications that have been at all successful:

List any techniques or medications that have made the problem worse:

List any drugs tried so far, and the cat's response to medication (improvement / side effects):

Miscellaneous

	Never	Occurs but not a concern	Occurs Would like to improve	Comments/describe
Jumps on counters	☐	☐	☐	
On furniture where not allowed	☐	☐	☐	
In rooms where not permitted	☐	☐	☐	
Nips / grabs – play bite	☐	☐	☐	
Altered Sleep – night waking	☐	☐	☐	
Hyperactive / over-exuberant	☐	☐	☐	
Hiding / avoidance	☐	☐	☐	
Not social – avoids affection	☐	☐	☐	
Climbing	☐	☐	☐	
Vocalization	☐	☐	☐	
Licking	☐	☐	☐	
Tail chasing / attack	☐	☐	☐	
Sucking	☐	☐	☐	
Light chasing	☐	☐	☐	
Snaps at air	☐	☐	☐	
Hyperesthesia (rippling skin)	☐	☐	☐	
Roaming / running away	☐	☐	☐	
Mounting	☐	☐	☐	

Other – Describe any problems not previously listed:

Medical Screen

Please have your veterinarian complete medical history and submit most recent diagnostic (lab) tests.

When was your cat's last veterinary visit?

Reason for visit:

Are vaccines up to date? ☐Yes ☐No If no, describe:

Does your pet have any ongoing medical problems? ☐Yes ☐No If yes, describe:

Is your pet presently on any medication? ☐Yes ☐No If yes, describe (include name, dosage, duration):

Has your pet had any laboratory tests? ☐Yes ☐No When: What tests?

If yes, indicate any abnormal findings:

Change in appetite: ☐Yes ☐No If yes, describe:

Change in weight: ☐Yes ☐No if yes, describe:

Does your pet drink excessively? ☐Yes ☐No If Yes, describe (how often, how much):

Does your pet have arthritis or any other painful condition? ☐Yes ☐No If yes, describe condition and treatment:

Have you noticed any deficits in your pet's senses? ☐Yes ☐No If yes, describe:

Have you noticed any change in stool frequency (how often) or in the way it looks ☐Yes ☐No If yes, describe:

Have you noticed any change in the frequency of urination or any discomfort? ☐Yes ☐No If yes, describe:

Have you notice any other health issues: ☐Yes ☐No If yes, describe:

Veterinary History Form – for referral cases to be completed by referring DVM

Today's date:	Date of pending behavior consultation:	
Client:	Pet Name:	
Clinic:	Referring Doctor:	
Clinic Phone #: ()	Clinic FAX #: ()	Clinic email:
Clinic Address:	City / town:	Postal Code:

Behavioral history

Describe the behavioral presenting complaint:

Please indicate any advice or counselling that you have given the client thus far:

Describe any medication or product recommendations and outcome.

Describe the pet's behavior in your clinic, including any problems that you have observed:

Has this pet's behavior in your clinic changed?

Medical history:

Date of most recent examination: Describe findings:

Are physical examination and vaccines up to date? ☐ Yes ☐ No If no, describe:

Current medications:

Describe any present medical problems and any treatment being received:

Describe any resolved medical problems, reoccurring medical problems or previous surgeries:

Is there any indication of pain ☐, sensory decline ☐, or cognitive dysfunction ☐

If yes, describe:

Does the pet have any dietary restrictions?

Diagnostic Screening Tests: Attach a copy of all recent laboratory tests OR list any recent tests and dates:

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